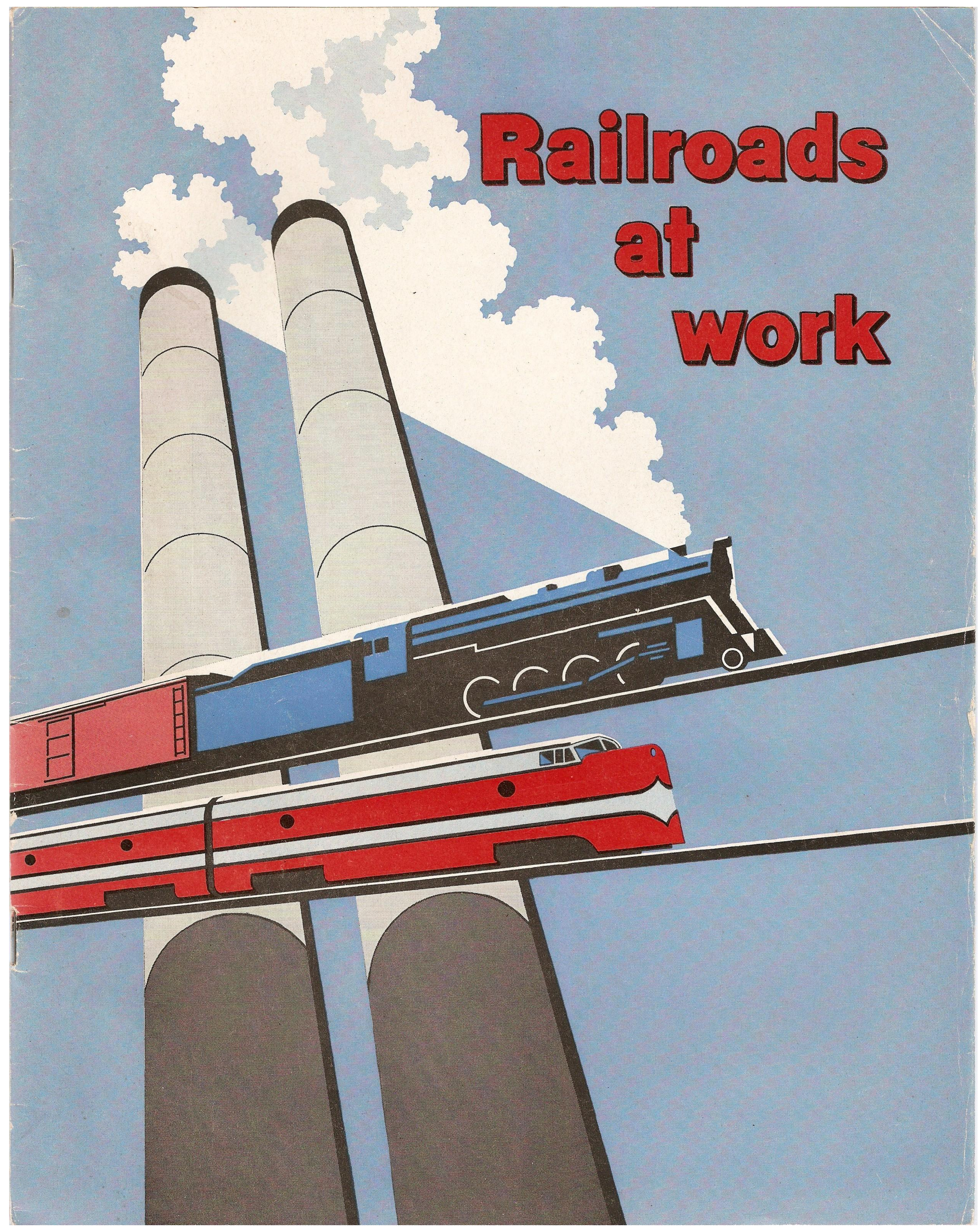
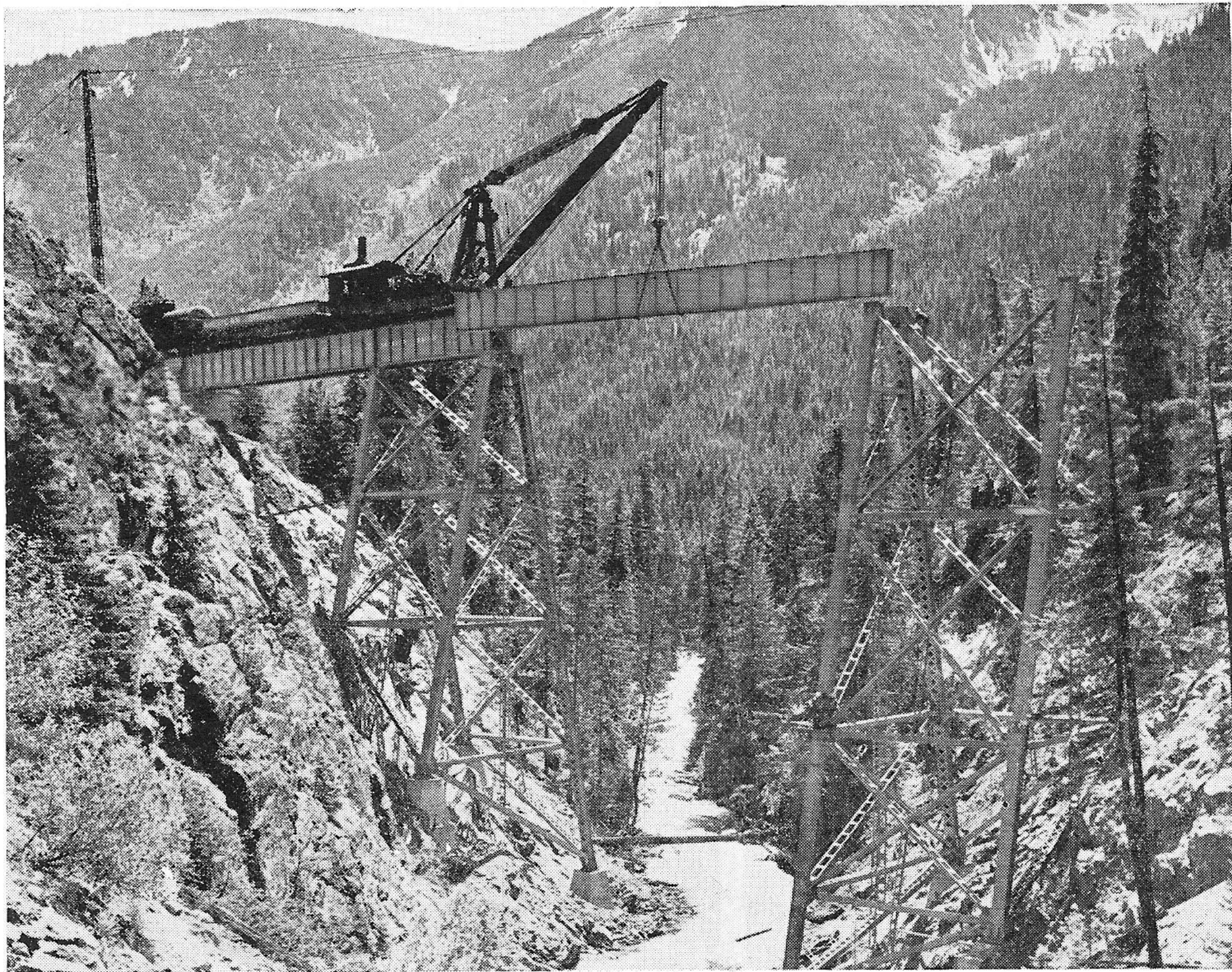


Railroads at work





THIS BOOK BELONGS TO

NAME

SCHOOL

HOME
ADDRESS

RAILROADS AT WORK

A Picture Book
of the American Railroads
in Action

SIXTH EDITION

TO TEACHERS

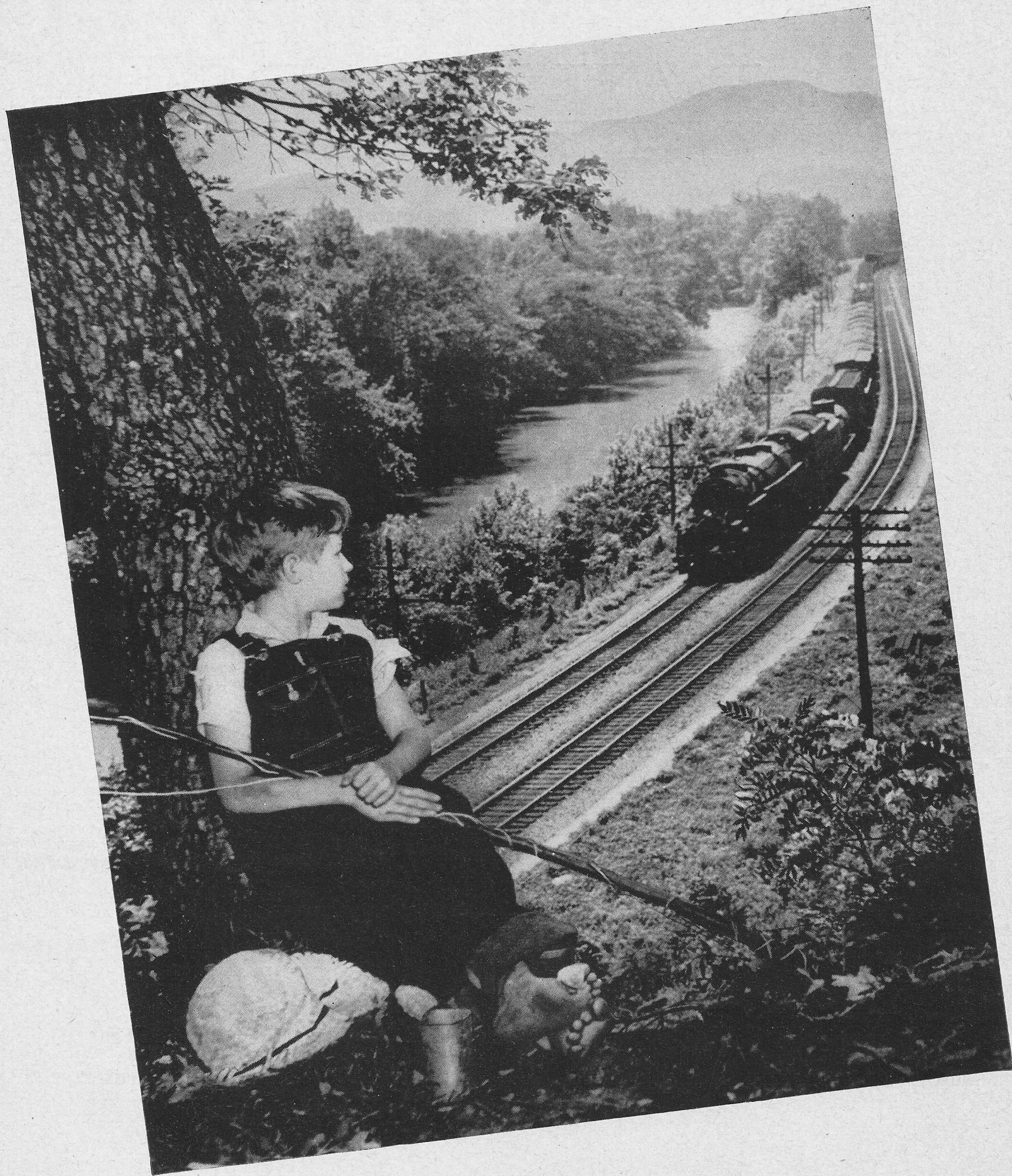
This booklet is designed for the use of pupils engaged in a study of transportation, and may be obtained in quantity for that purpose. It is keyed to the *Teacher's Kit for a Study of Railroad Transportation* which is available *only to teachers*.

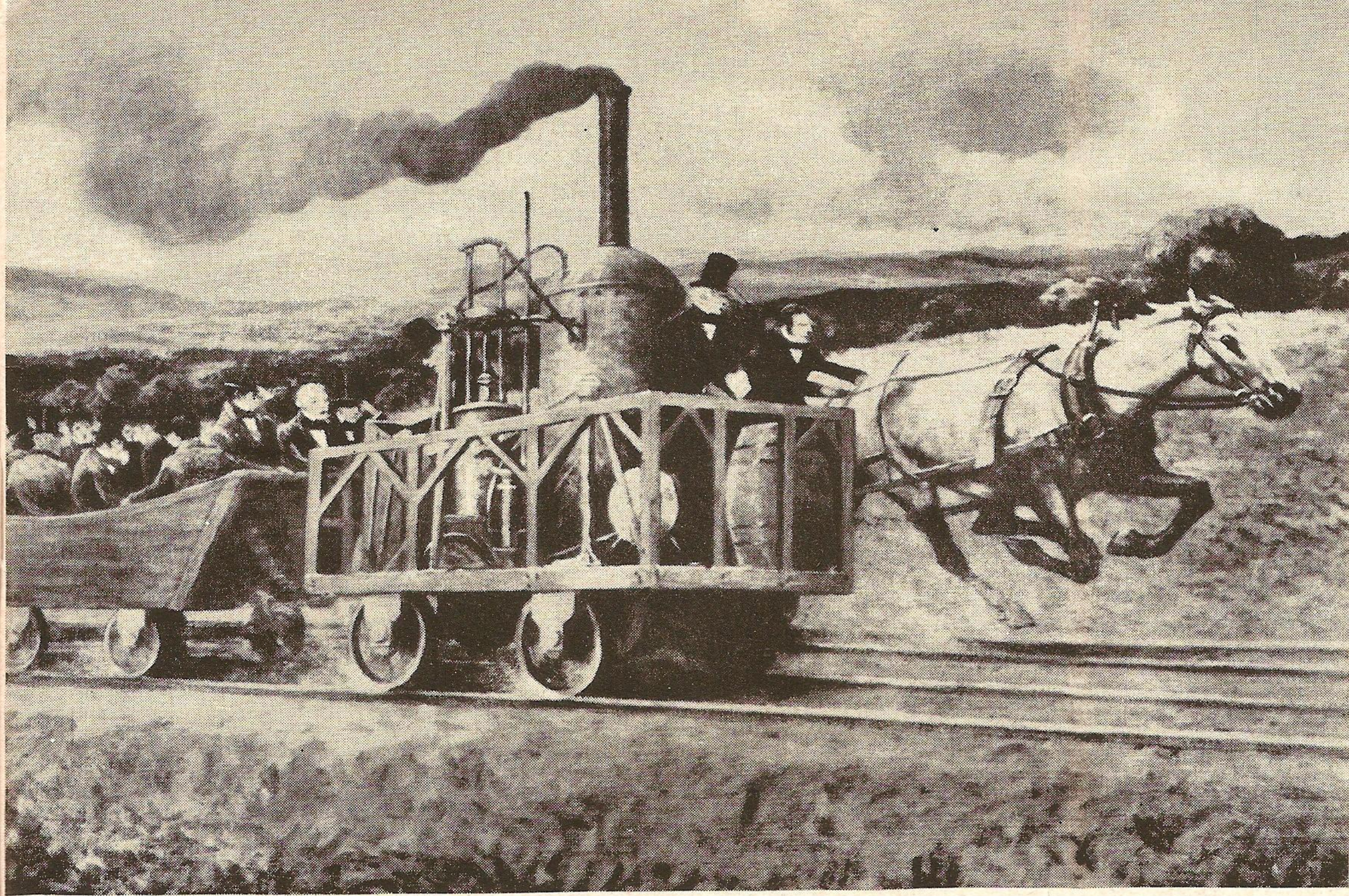
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ASSOCIATION OF AMERICAN RAILROADS

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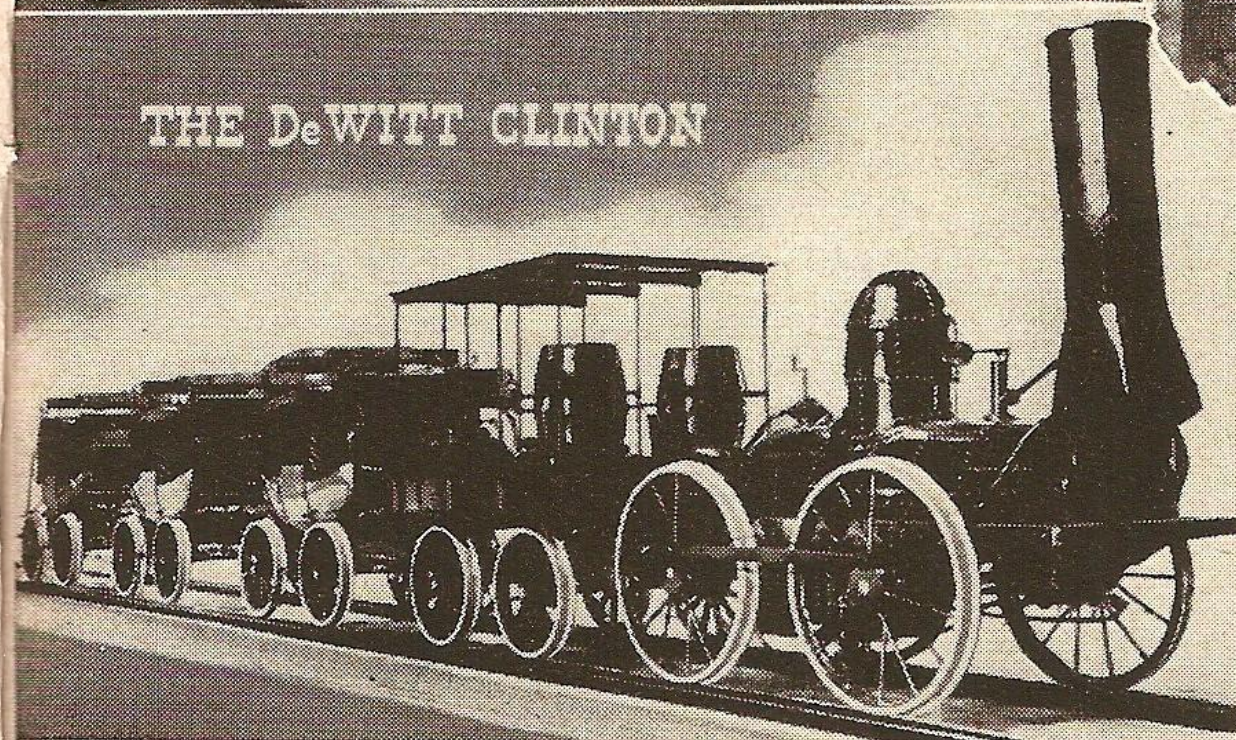
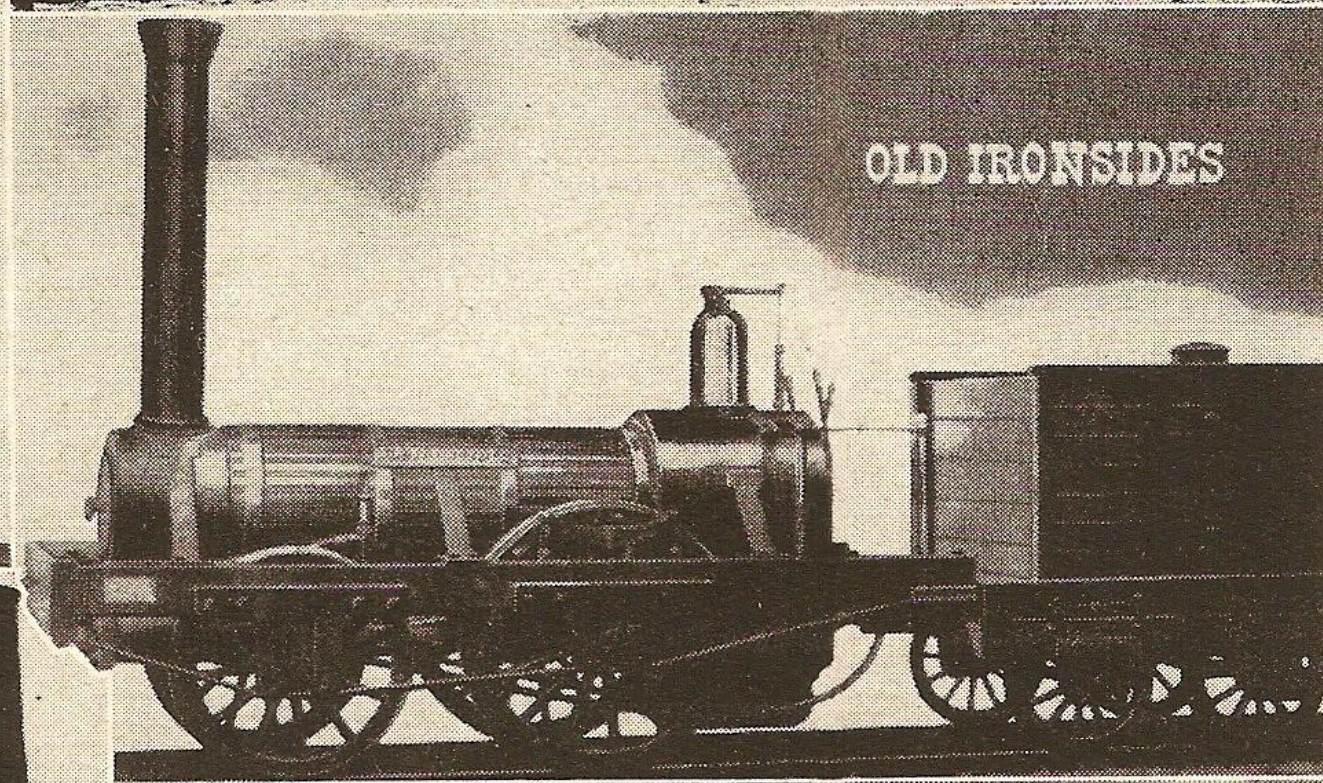
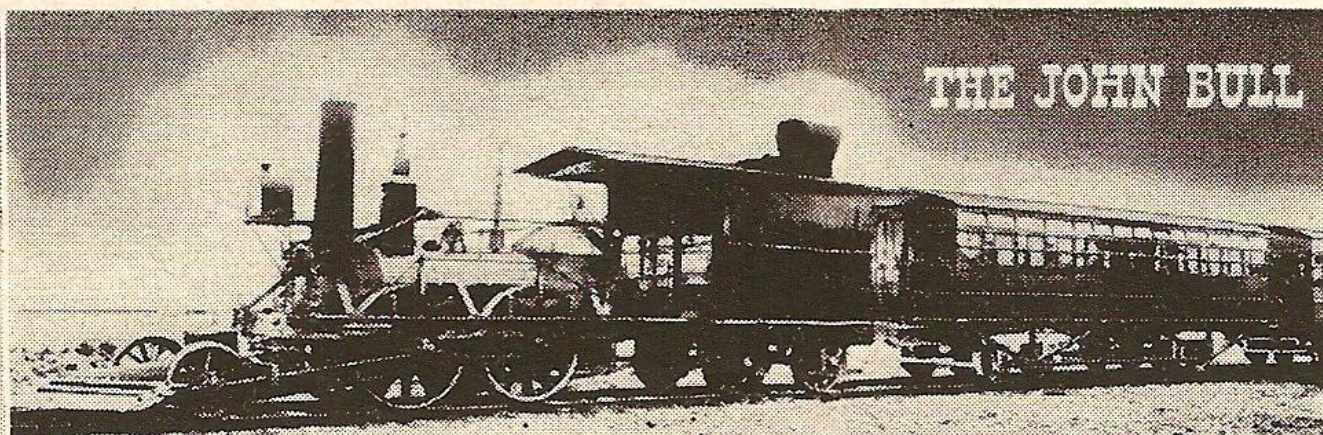




RACE OF IRON HORSE AND HORSE CAR

1 Many years ago men found a way to make steam run a machine. This machine was called a steam engine. Years later in England, George Stephenson and other inventors put a steam engine on wheels and made it run over a road of rails. This traveling steam engine was called an "Iron Horse."

In 1829, Peter Cooper, American inventor, built an Iron Horse. It was so small that he called it *Tom Thumb*. It was the first Iron Horse in America to haul passengers. On a trial trip near Baltimore, the Iron Horse and a real horse tried to see which could go the faster. For a while the Iron Horse was ahead. Then it broke down, and the real horse won the race!



2 As years went by, other and better Iron Horses were built and many roads of rails were built for them to run upon. Some people called the engines "Puffing Billies." But the name which finally came to be used was LOCOMOTIVES.

This picture shows five famous locomotives of the days when railroads were young. They are: *Stourbridge Lion*, first British locomotive tried out in America; *DeWitt Clinton*, first to pull a train in New York State; *John Bull*, first to pull a train in New Jersey; *Old Ironsides*, first in Philadelphia; and, *Best Friend of Charleston*, first locomotive to pull a train of cars and the first locomotive to be placed in regular service in America.

"PUFFING BILLIES"

3 This is a typical railway station and train about the time Abraham Lincoln became President. Locomotives were then larger and stronger than the first Iron Horses, but they would look small indeed beside today's big engines. In the picture, we also see an ox cart, drayman's wagon, carriage, cab, and stagecoach—all in common use in Lincoln's time.

Many railroads were then being built. They opened new regions. Settlers flocked in. Farms and factories were started. Mines were opened. Villages grew up around railway stations. Many of them became important towns and cities. Schools and colleges were founded. Churches were built. America was fast becoming a great nation.

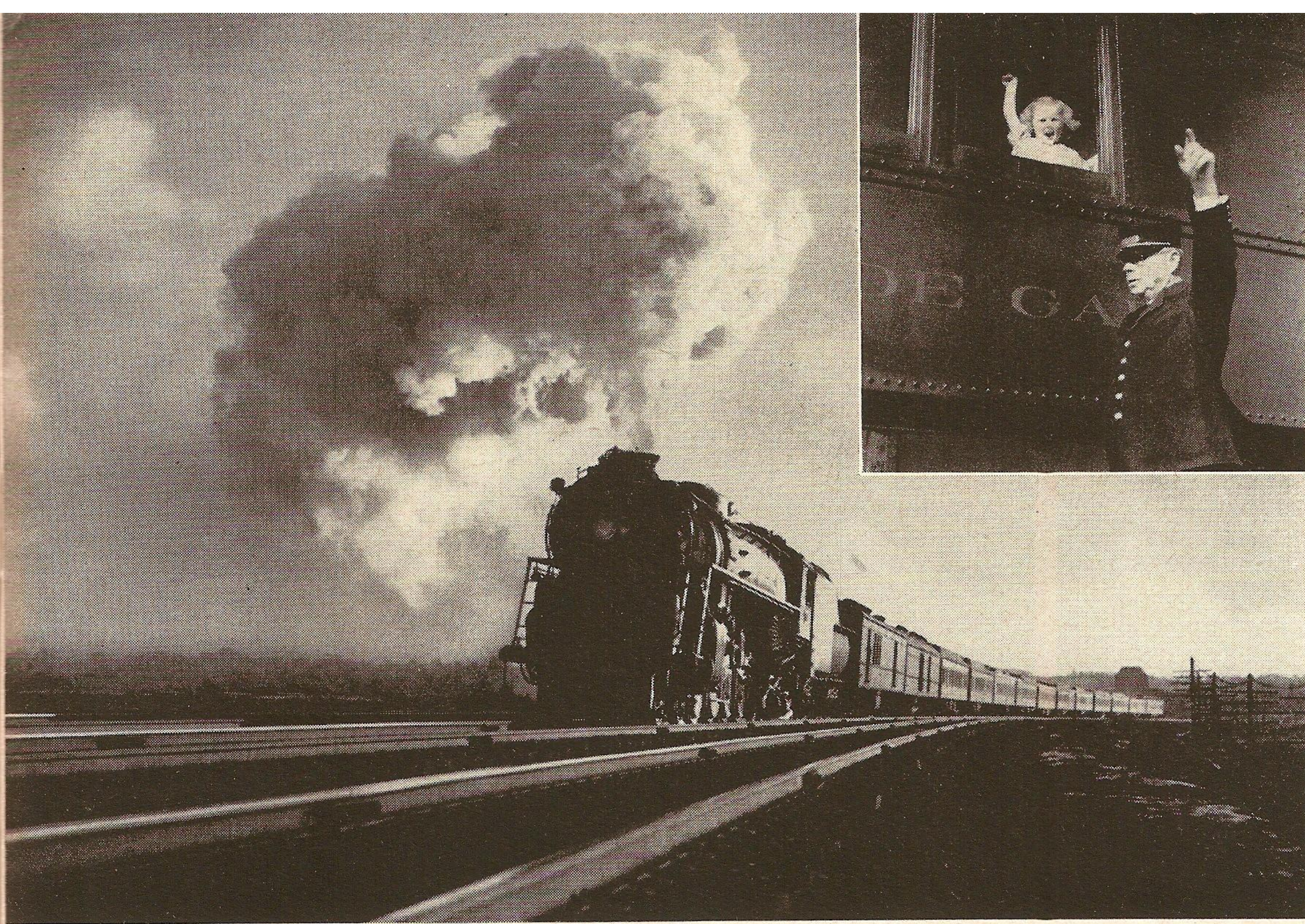
RAILWAY STATION AND TRAIN IN THE 1860's

THE GOLDEN SPIKE CEREMONY

4 One of the great events in American history was the completion of the first chain of railroads to the Pacific Coast. This picture was taken in 1869, a few minutes after the Golden Spike was driven at Promontory, in the mountains of northern Utah. A locomotive from Sacramento and a locomotive from Omaha touched "noses" to symbolize the new bond between East and West. The event was celebrated from coast to coast.

Railway transportation brought the Atlantic and Pacific regions within a few days' travel of each other. Since then the time has been shortened to less than three days.





STEAM PASSENGER TRAIN

5 This is one of the many thousands of passenger trains that start on their runs in the United States each day. Steam, electric, and, more and more, Diesel-electric engines are used.

Today's railroads and trains differ in many ways from those of long ago. Tracks are stronger, heavier, and smoother. Locomotives are larger and more powerful. Then, most passenger cars were built of wood. Today, most passenger cars are built of metal. Then, cars were lighted by gas or kerosene. Today, cars are lighted by electricity. They are also air-conditioned, with temperature and ventilation controlled at all seasons.

ELECTRIC PASSENGER TRAIN



6 This passenger train is pulled by an electric locomotive. On the roof of the locomotive are two steel frames, called pantographs. One pantograph is folded. The one at the far end is opened. The top part touches the overhead wires which are charged with electricity. The locomotive draws electricity from the wires.

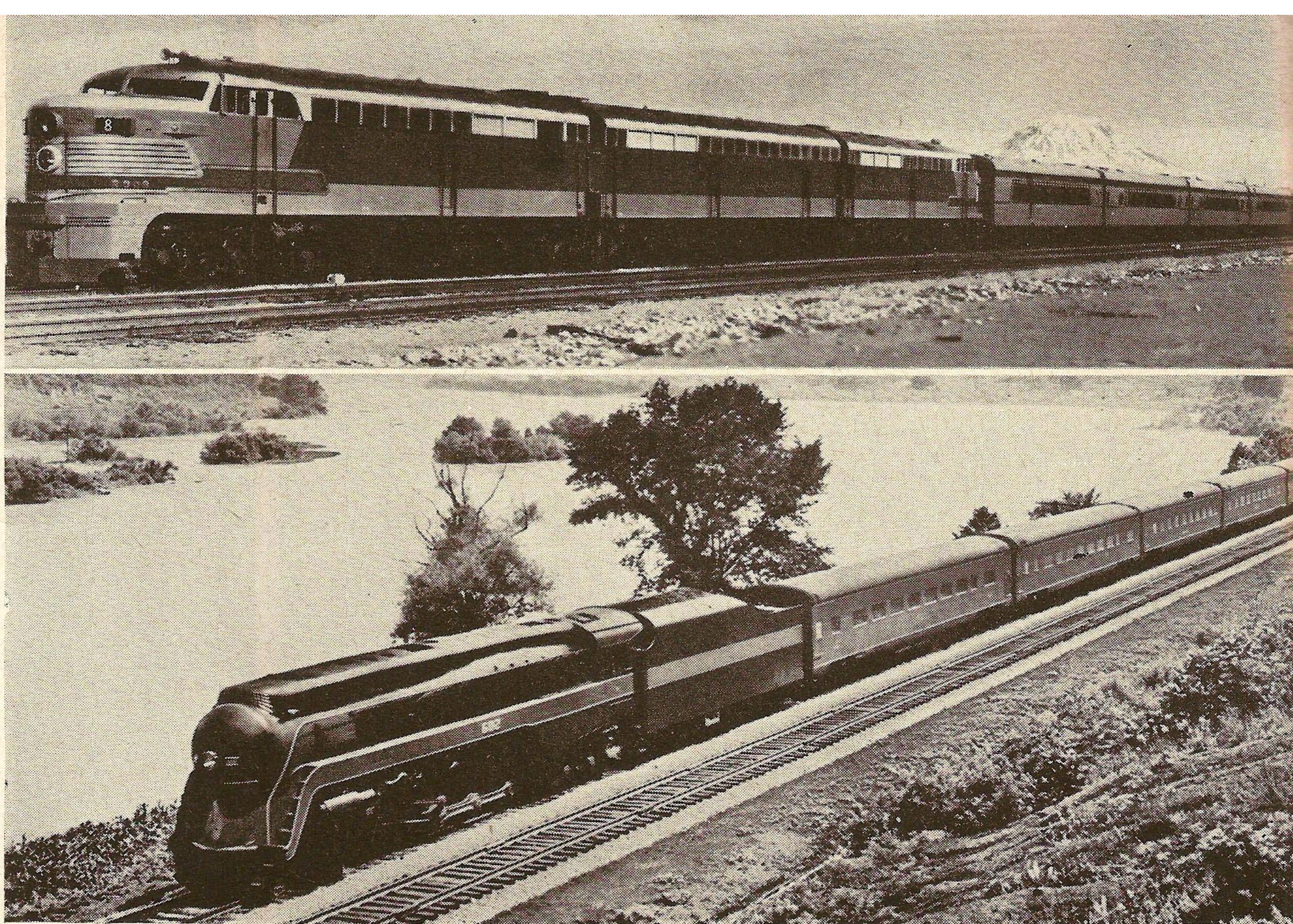
Electric locomotives carry no coal and very little water. Thus, they do not need tenders. They can go forward or backward with equal ease. They do not have to be turned around.

7 The modern trend in passenger service is the fast streamlined train. This type of train is usually built of strong but lightweight metals, and it weighs less than a standard passenger train.

Some are pulled by steam locomotives, as shown in the bottom picture. Most streamlined trains are pulled by Diesel locomotives, as shown in the top picture.

The Diesel locomotive has an oil-burning engine and a generator which supplies electric current to drive the locomotive.

Streamlined trains are air-conditioned. Sealed windows shut out dust, smoke, cinders, and drafts and reduce outside train noises.



STREAMLINED PASSENGER TRAINS

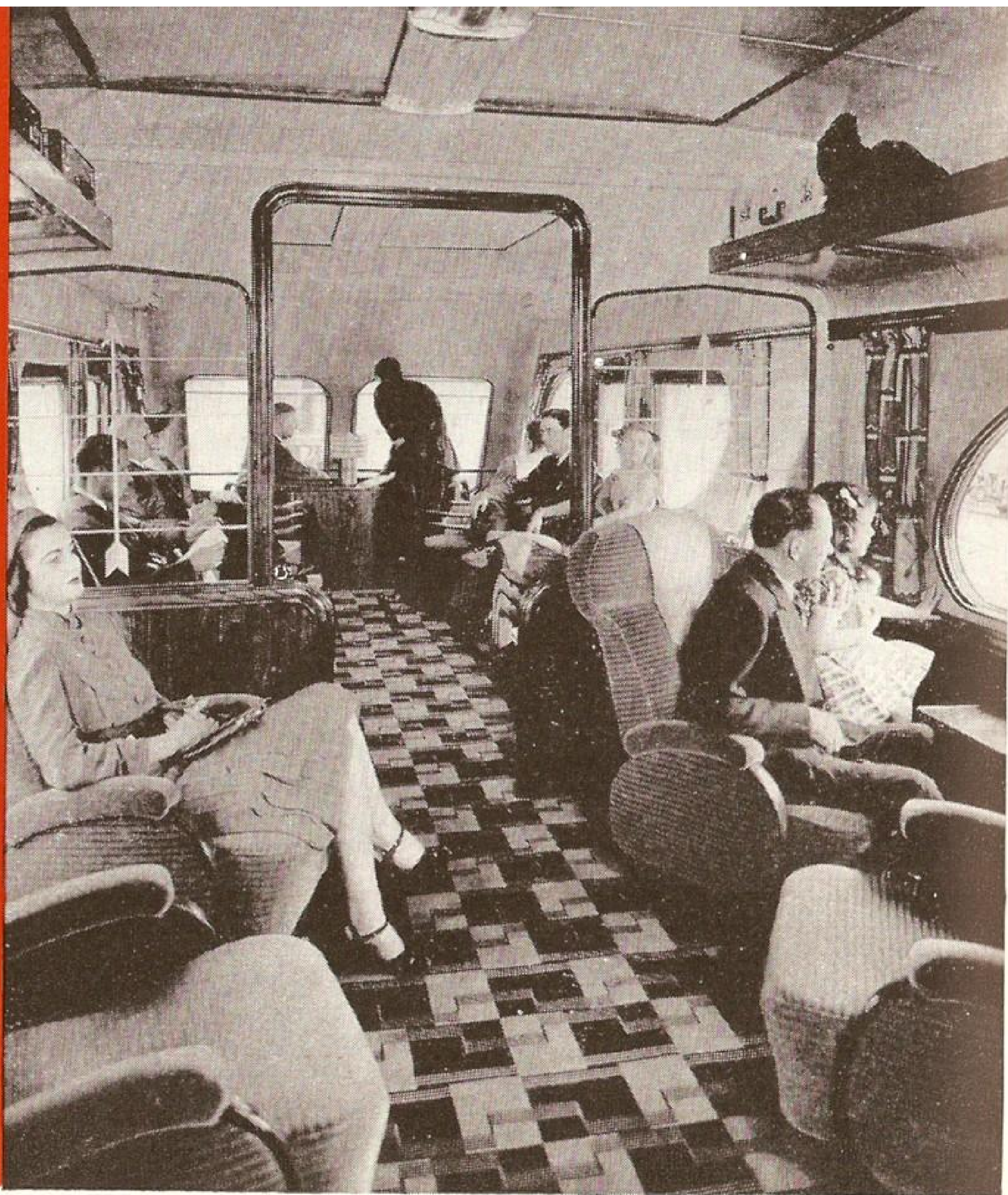
PASSENGER STATION IN A BIG CITY



8 Nearly every town and city has a railway passenger station. The size of a station usually depends upon the number of passengers handled. At the station, we buy tickets for our trip, check our baggage, and board our train. Sometimes we go to the station to meet friends who are arriving by train or to bid good-bye to friends who are going away.

In a large railway station, like the one in the picture, there are ticket offices, information booths, waiting rooms, baggage rooms, lost-and-found offices, parcel check rooms, lockers, telegraph offices, telephone booths, restaurants, news

SIGHTSEEING
FROM AN
OBSERVATION
CAR



Many passenger trains carry observation cars or lounge cars like the one in the picture. These cars are fitted with soft carpets, comfortable reclining chairs and sofas. The observation car or the lounge car may be called the "living room" of the train.

The observation car is usually attached to the rear of the train. Its large windows afford an excellent opportunity to view the passing scenery. In the car are tables for playing games, or for refreshments, a writing table for those who wish to write letters or post cards, and racks containing the latest magazines. Stationery and sometimes scenic post cards are provided free of charge by the railroad company. Many observation cars are equipped with radios for the entertainment of passengers.



SOLDIERS ON THE MOVE

19

In time of war our railroads carry millions of soldiers, sailors, marines, WAVES, WACS, and SPARS to and from training centers. They also carry millions of members of the armed forces on furlough. In a recent year, about one-half of all the sleeping cars and one-third of all the passenger coaches were kept busy carrying troops.

A soldier makes about six railroad trips in line of duty while in training. He makes other railway journeys while on furlough.

Railroads give soldiers and other members of the armed forces a special low round-trip rate for furlough travel of $1\frac{1}{4}$ cents a mile in coaches. The railroads collect an average of slightly less than 2 cents a mile for all passenger travel.



LOADING THE BAGGAGE CAR

The baggage car is the storeroom of the train. It carries baggage for the passengers and business mail for the railroads. The man who checks baggage in the station is the baggage agent or baggage room attendant. The man who looks after the baggage car on the train is the baggageman.

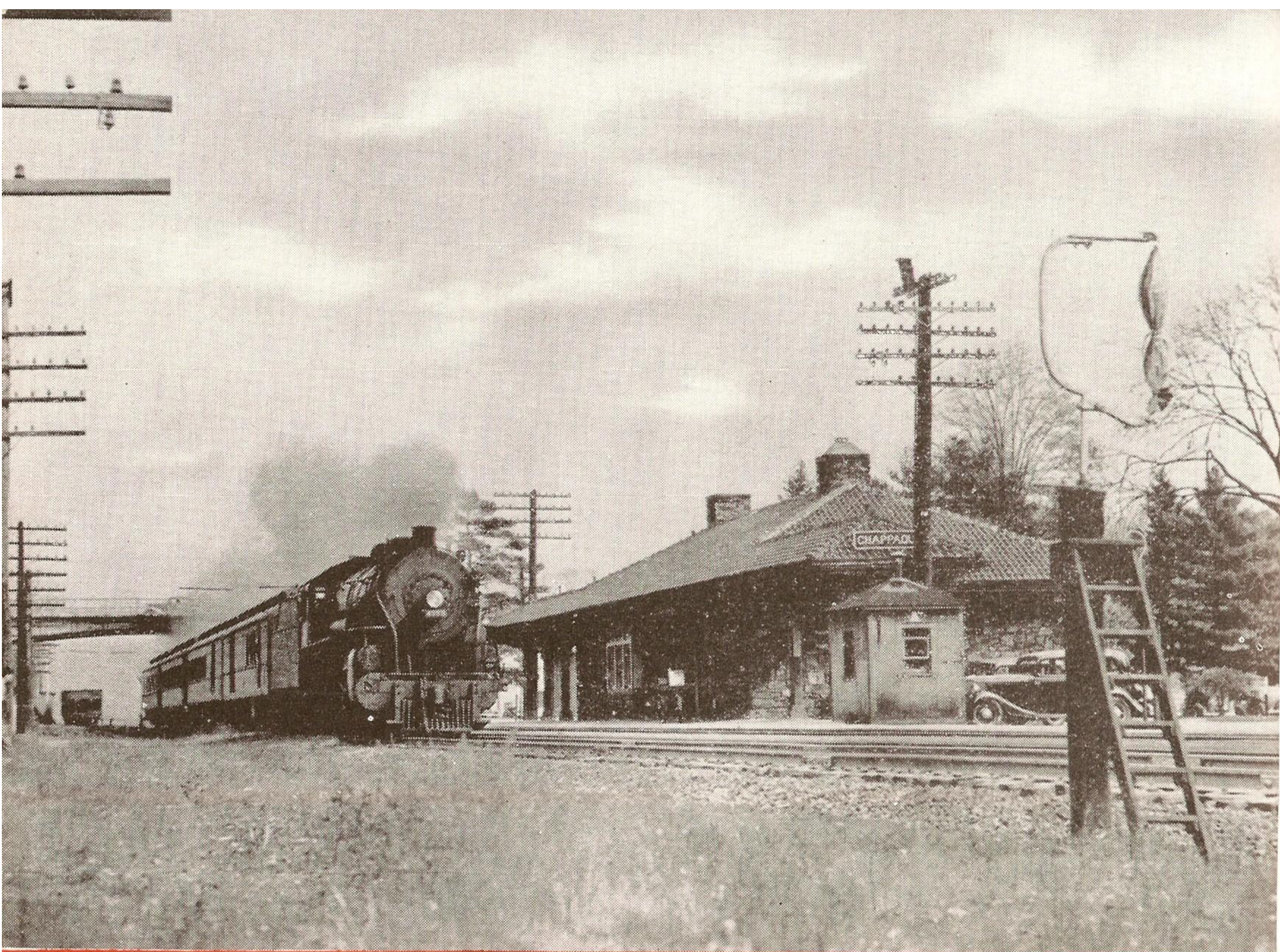
If you go by train you may take along trunks and handbags. You may keep one or more handbags in the passenger car. Those not needed during the journey and all trunks are carried in the baggage car. Each passenger is allowed 150 pounds of baggage free on a full-fare ticket, or 75 pounds on a half-fare ticket. A charge is made when the weight is greater.

SORTING
MAIL IN A
RAILWAY
POST OFFICE
CAR



While the train speeds along—night or day—clerks in the railway post office car are busy sorting mail, making up mail pouches and performing other duties. They help the Post Office Department and the railroads to provide prompt and regular service to people in every part of the United States.

Railway mail clerks become very skillful in sorting and handling mail. They know hundreds of railway mail routes. They memorize many post offices and train connections, so that it is not necessary for them to keep looking for such information in books or bulletins. The mail clerk receives and puts off pouches of mail at nearly every station where there is a post office. Most of our mail comes by rail.



HOW THE TRAIN CATCHES A MAIL BAG

The mail crane in the right foreground enables a train to pick up a mail pouch without stopping or slowing down. The crane is located beside the railway track, usually near the railway station. The mail bag is attached to the crane just before the train is due.

In the door of the post office car is a steel catcher arm. A clerk in the mail car swings the catcher arm out so that when it passes the crane it grabs the mail bag where it is tied in the center, as seen in the picture. The catcher arm is then swung inside the car. The mail bag is removed and its contents are emptied on the sorting table.

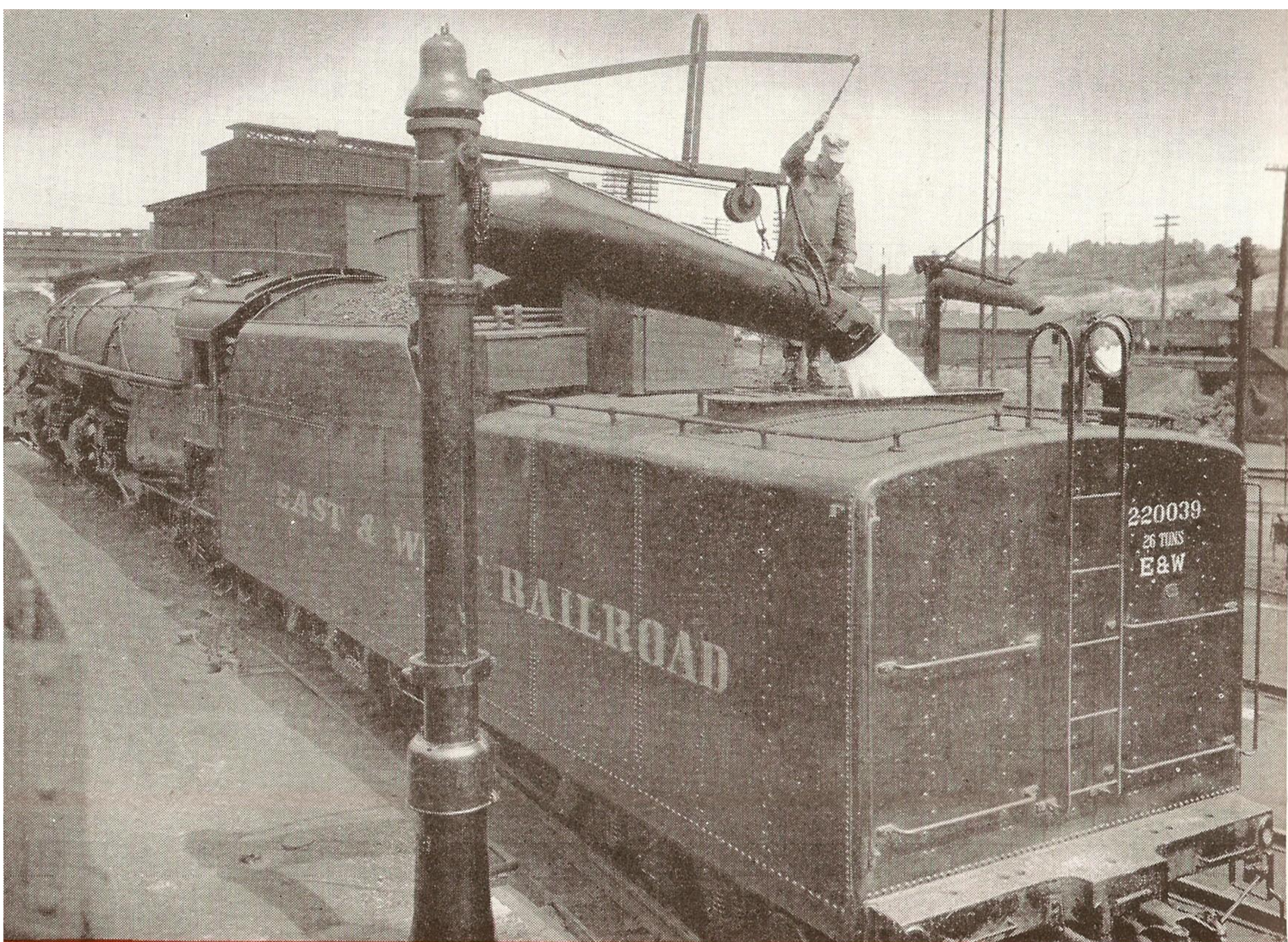


UNLOADING AN EXPRESS SHIPMENT

23

The Railway Express Agency handles around half a million express shipments daily. Some of these shipments are only for short distances; others are for points hundreds or thousands of miles away.

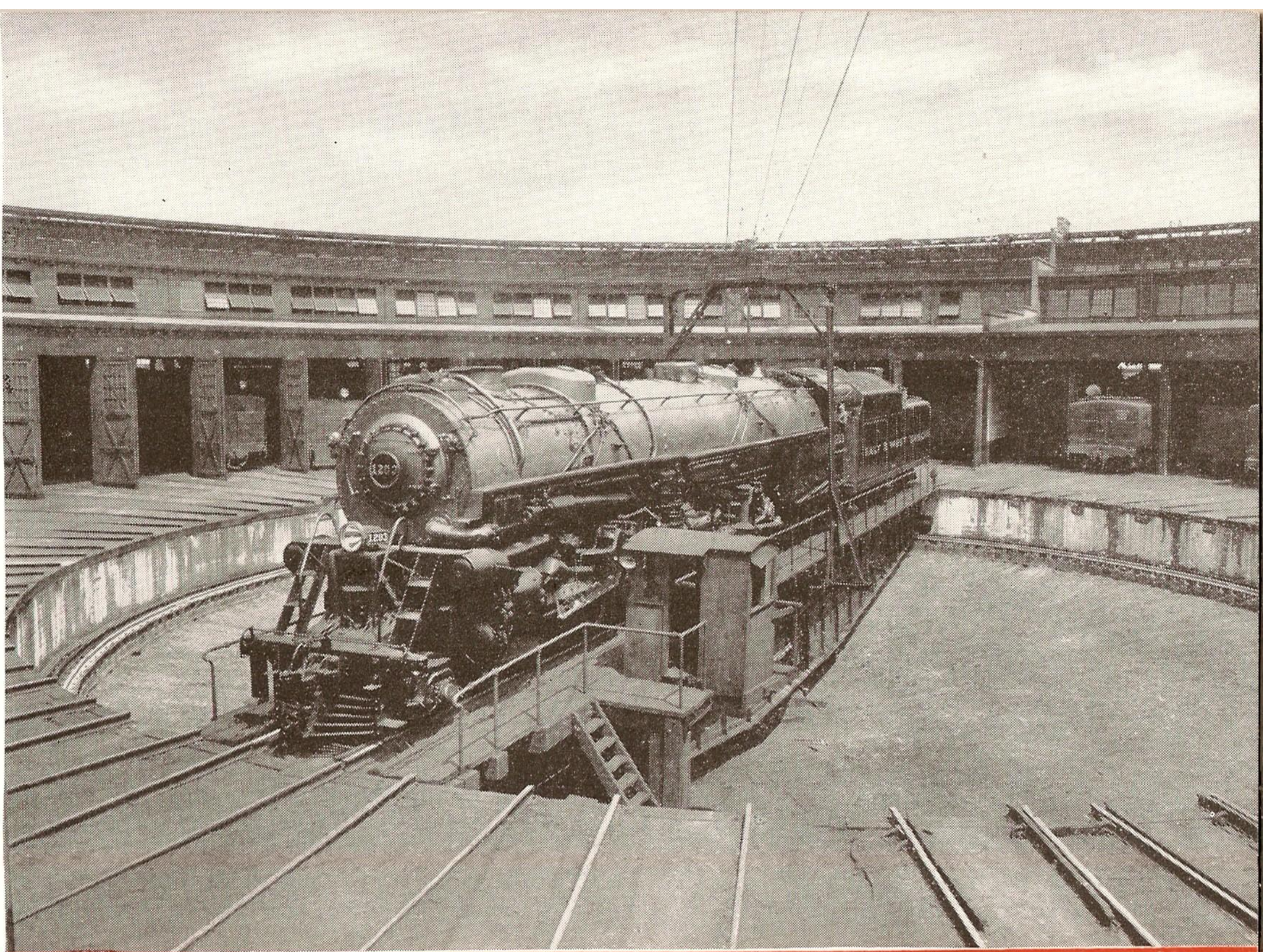
The Railway Express Agency carries all sorts of things—in packages, in boxes, in crates, in cases, and in bags, barrels, and other containers. Express shipments include valuable gems, works of art, bicycles, toys, films, medical supplies, flowers, fresh fish, fruits and vegetables, animals—in fact, anything which requires special attention or quick delivery. Express service is fast. It uses railroads, airplanes, steamships and motor trucks. The Agency operates 15,000 motor trucks for collecting and delivering express. There is a Railway Express office in nearly every city and town in the United States.



The big steam locomotive is a hard worker, and, like other hard workers, it has a hearty appetite. It lives on coal (or fuel oil) and water. Attached to each steam locomotive is a tender, which is used to carry a supply of fuel and water.

In this picture the fireman is filling the water tank in the locomotive tender. To open the valve in the water spout he pulls down the cord attached to the long pole. When the tank is filled, he will let go of the cord. Then the valve will close and cut off the water.

A modern coal-and-water station can load a large tender with coal and water in about four minutes.

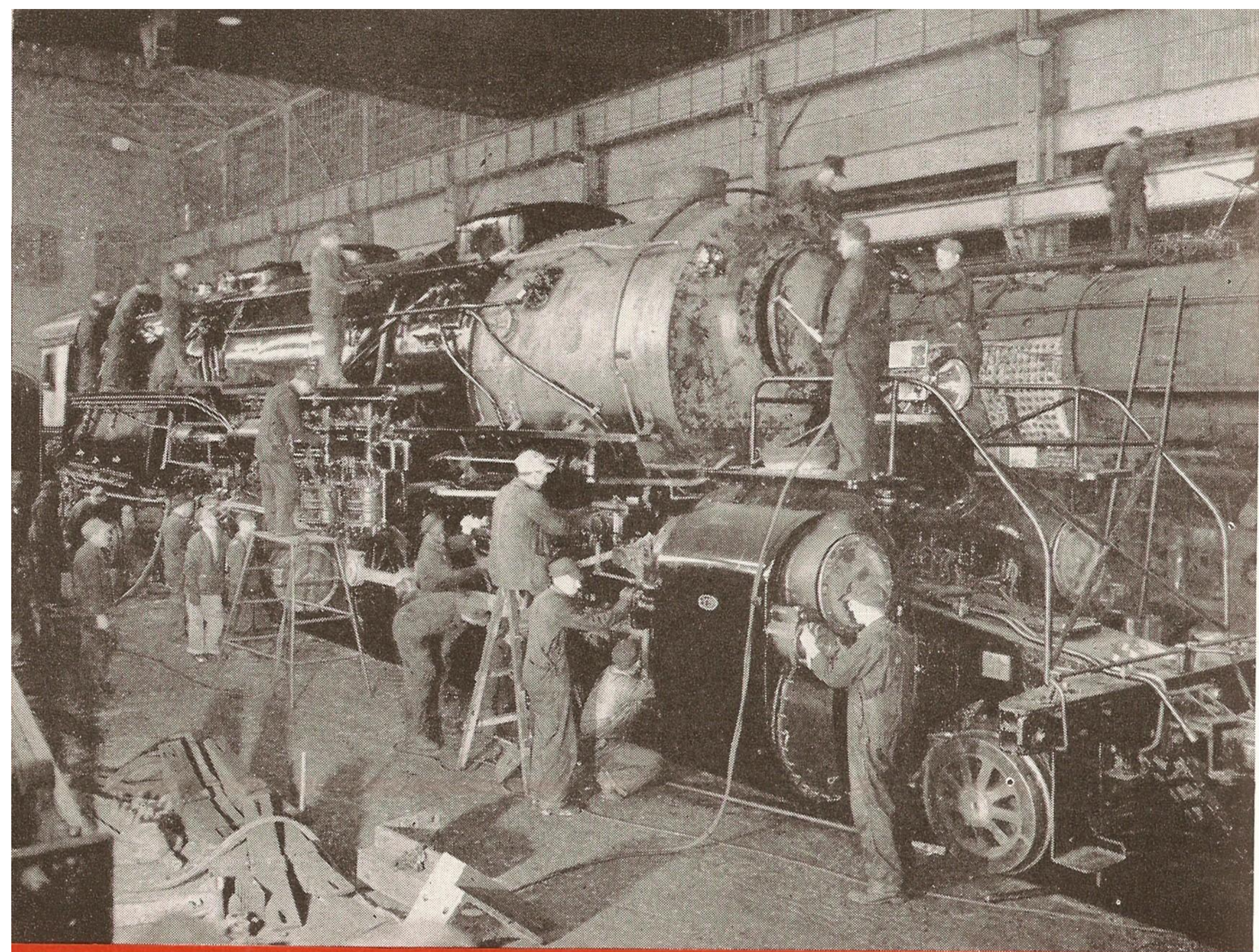


THE ROUNDHOUSE AND THE TURNTABLE

25

Here are two interesting features of the railroad—the roundhouse and the turntable. The roundhouse, as its name indicates, is a circular shaped building. Each entrance seen in the picture leads to a “stall.” Locomotives come to the roundhouse for cleaning and for light repairs.

The turntable is used for turning a locomotive around. It is a steel bridge-like structure, pivoted at the center and supported on each end by wheels which turn on a circular track. Tracks spread out from the turntable like the spokes of a wheel. In order to get into the roundhouse, the locomotive is driven onto the turntable, which is then turned to the track leading to the particular stall to which the locomotive is to go.



IN THE LOCOMOTIVE ERECTING SHOP

When a locomotive needs more extensive repairs than can be made in the roundhouse it is taken to a big railroad shop for "back shop" work. Here it may remain for weeks while skilled mechanics replace tubes, axles, wheels, brakes, or other worn out parts, repair other parts, give it a fresh coat of paint and make it almost as good as new. In the larger railroad shops are powerful electric cranes which can pick up and carry a huge locomotive as easily as a boy can pick up and carry a lunchbox.

Among those who work in railroad shops are machinists, machinist's helpers, blacksmiths, blacksmith's helpers, boilermakers, boilermaker's helpers, crane operators, electric drill operators, lathe operators, welders, riveters, inspectors, metal workers, painters and laborers.



THE CAR INSPECTOR AT WORK

27

Railroads employ many men who examine railway cars to make sure that they are in good condition. These men are called car inspectors. The car inspector must know many things about railroad cars, and he must be thorough in his work. If he finds that a car is not in good condition, he reports it by number to his foreman, who arranges to have it repaired.

The car inspector examines both passenger and freight cars. He is constantly on the lookout for defects, which, if not attended to, might cause accidents or delays. He helps to keep our railroads safe for travelers and workers.



A TRAIN CROSSING A BRIDGE

Without bridges, travel would be slow and difficult. Bridges make it possible for railway trains to cross rivers and to run from one city to another by more direct routes than they otherwise could.

There are about 190,000 railroad bridges of all kinds and sizes in the United States. The longest bridge in this country is twelve miles in length.

Most railway bridges are made of concrete and steel. The principal kinds of bridges are *deck plate girder*, *deck truss*, *through truss*, *suspension*, *cantilever*, *viaduct* and *trestle*.

The "legs" of the bridge are called *piers*. The section between two piers is called a *span*. The "floor" of the bridge where the tracks are located is called the *deck*.



A TRAIN ENTERING A TUNNEL

A bridge carries the railroad above the surface of the earth. A tunnel carries it below the surface of the earth. Like the bridge, the tunnel enables trains to run between cities by a more direct route than would otherwise be possible. It enables them to pass through, instead of around, mountains and to travel at a more level grade than would otherwise be possible. Tunnels also enable trains to pass under cities and under rivers and harbors.

There are more than 1,500 railroad tunnels in the United States. They range from 100 feet to nearly 8 miles in length. Some tunnels are built for one railway track only. Others are built for two or more tracks.



The sign on the right informs motorists and pedestrians that this is a railroad crossing with four tracks. It tells them that they should stop on the red signal light.

Where traffic is heavy, crossings are protected by watchmen or flagmen or by gates, bells, flashing lights or other warning devices. When the train approaches a crossing the engineer or the fireman sounds the locomotive whistle and rings the bell, warning motorists and other persons who use the highway that the train is coming.

We should remember that the only safe way to cross a railroad track is to *stop, look, and listen* beforehand. If a train is coming from either direction, we should wait until it has passed before crossing the tracks.

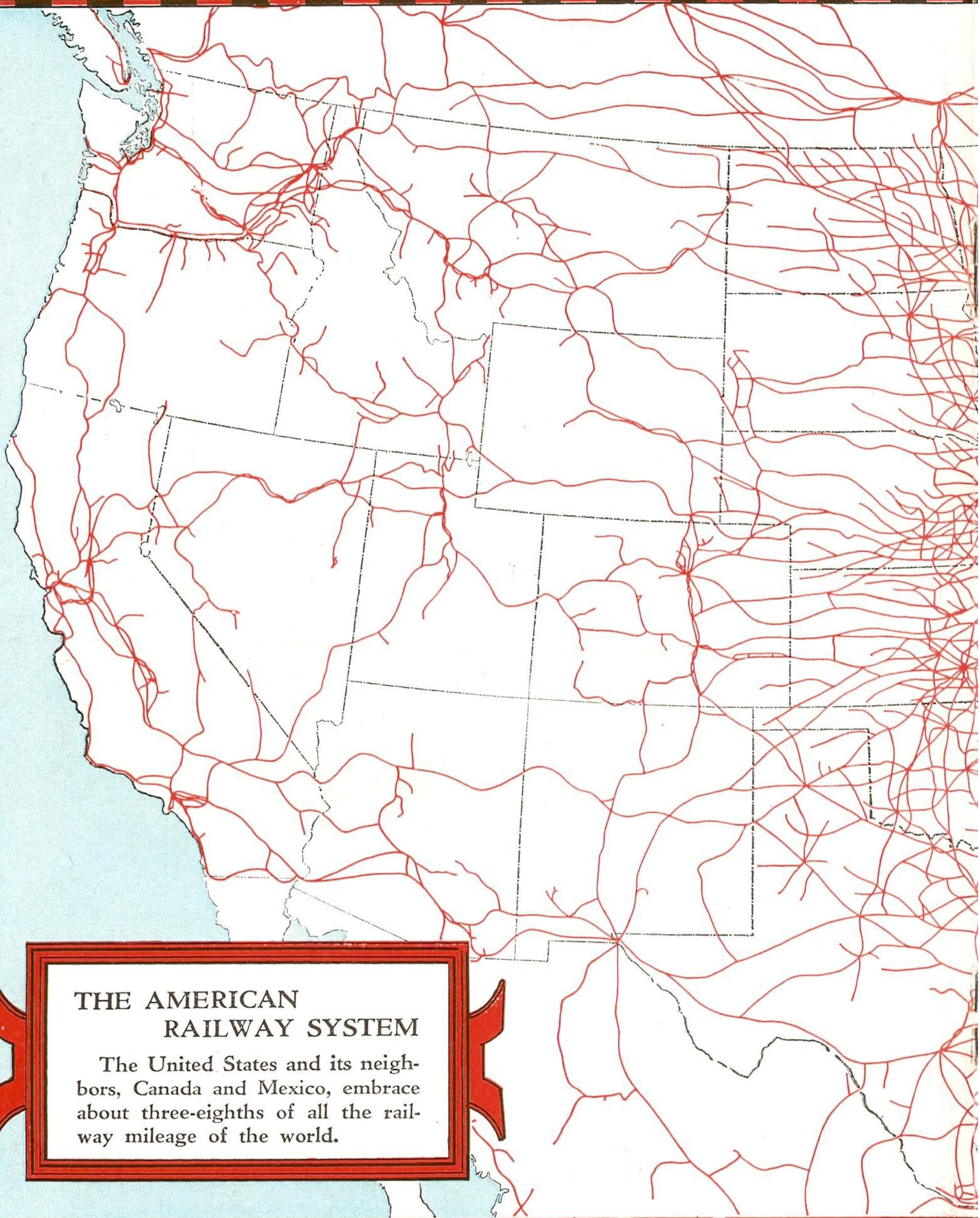
THE TRACK REPAIRMEN AT WORK



With a locomotive crane to do the heavy lifting, the men are taking up old and worn rail and laying new rail in its place. This is one of many ways the railroad keeps its tracks in good condition. Other groups of men, called section crews, replace cross-ties, spikes and other parts of the track when the old ones wear out.

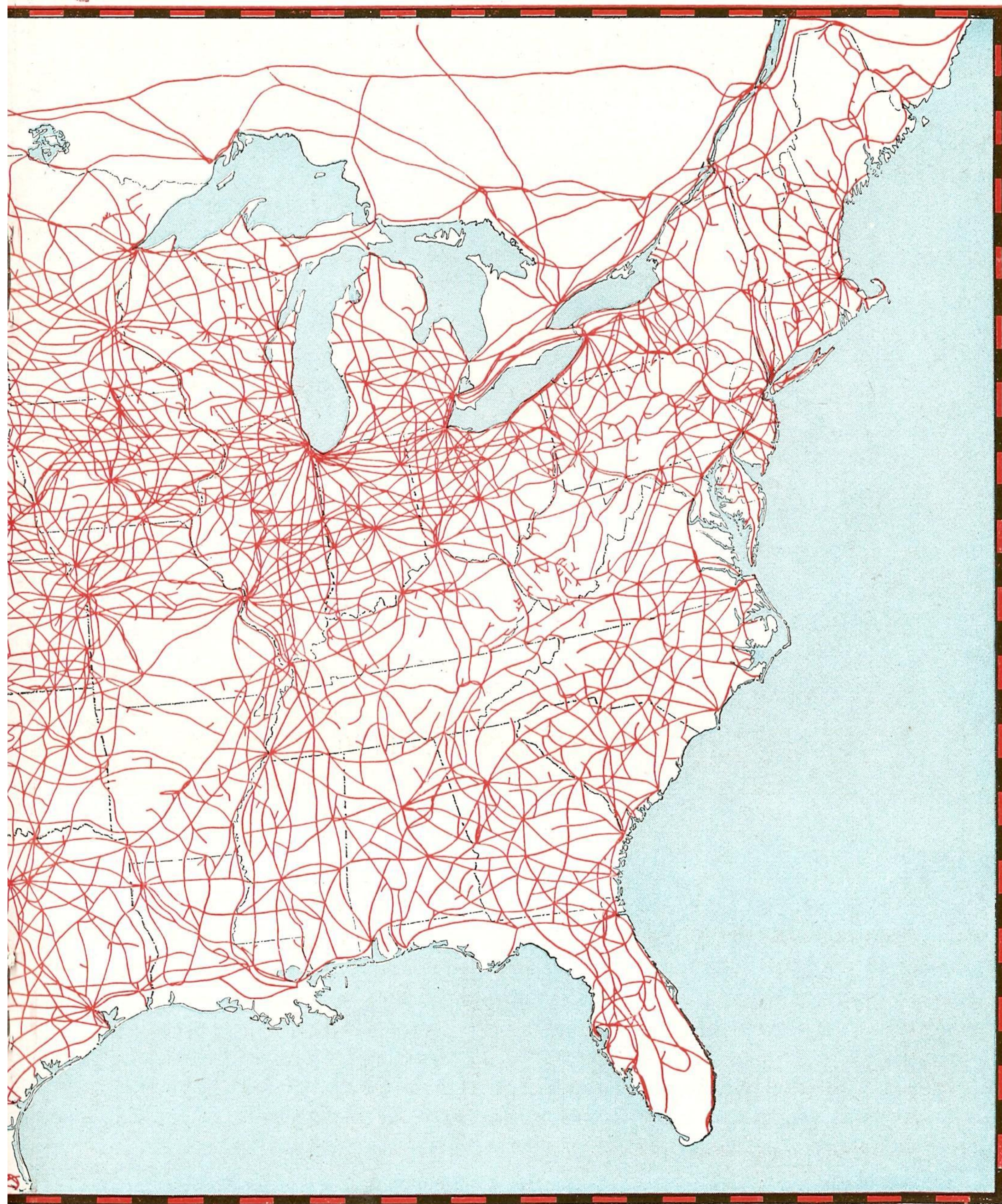
In charge of each crew is a foreman who has had years of experience and is capable and dependable.

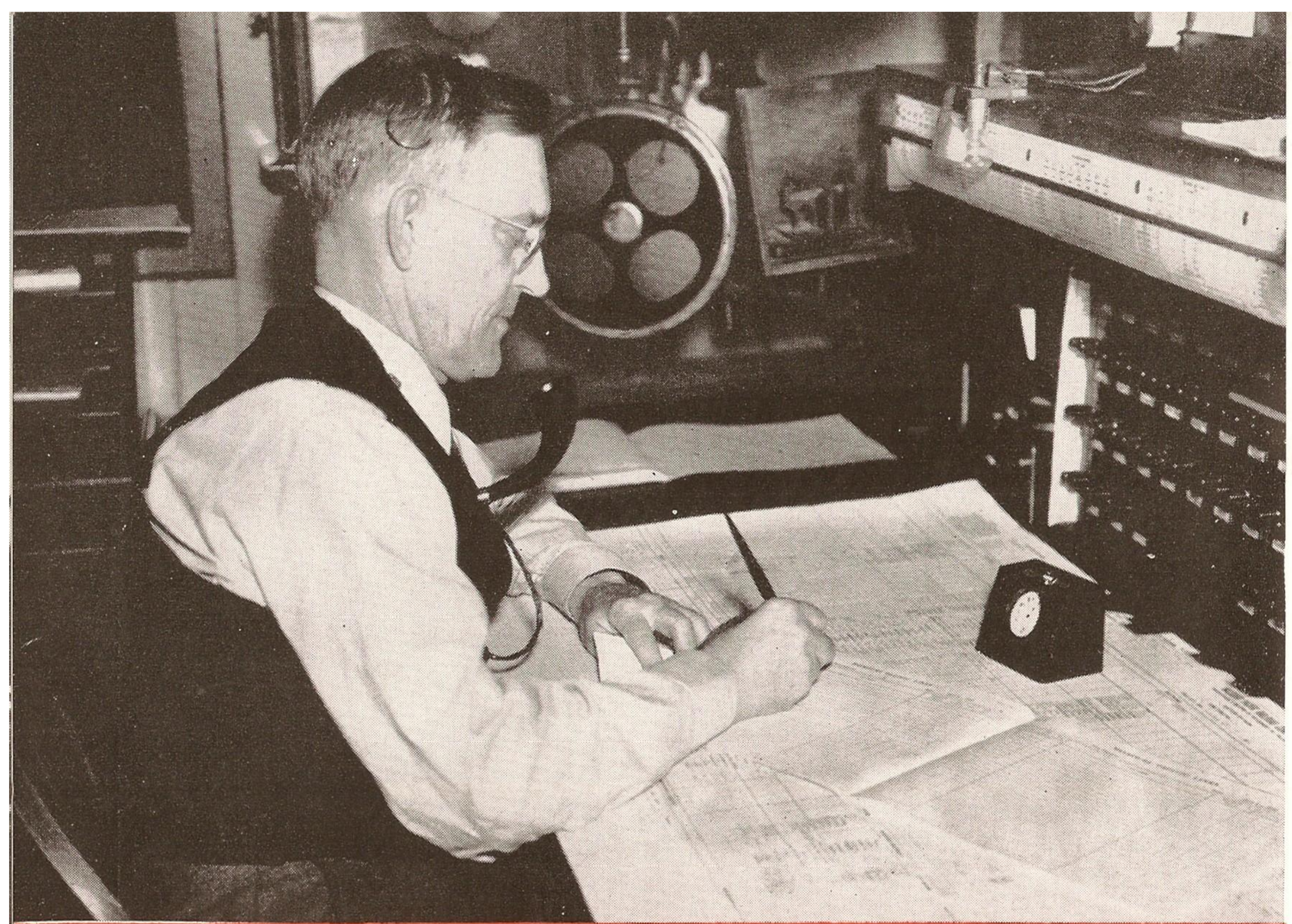
Our railroads have many section crews and other crews of workmen whose job is to keep tracks, bridges, trestles, tunnels, telephone and telegraph wires and signals in good condition, just as roundhouse and shop workers keep locomotives and cars in good condition.



THE AMERICAN RAILWAY SYSTEM

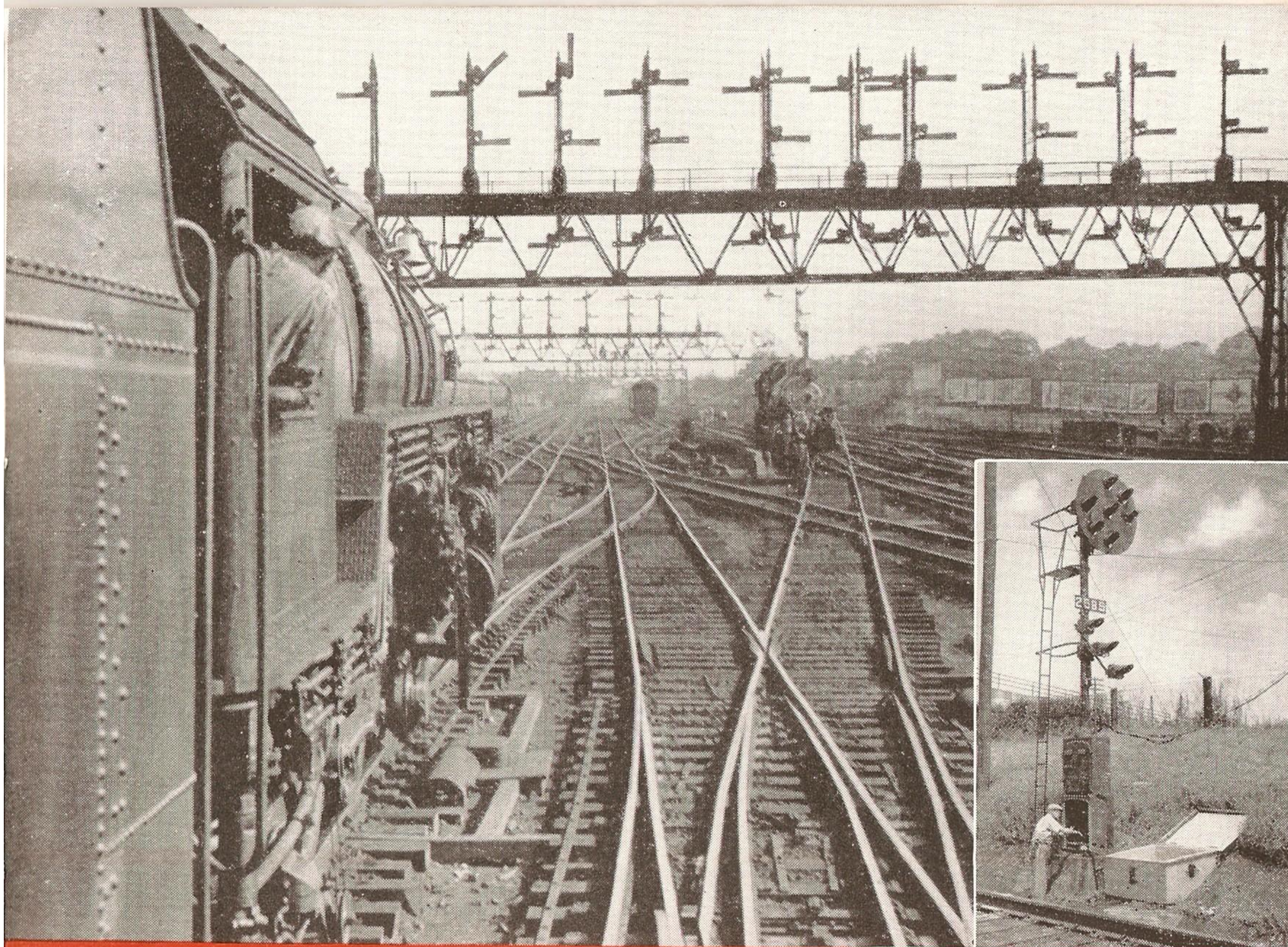
The United States and its neighbors, Canada and Mexico, embrace about three-eighths of all the railway mileage of the world.





THE TRAIN DISPATCHER

The train dispatcher is the man who controls the movements of trains. On the large sheet before him, he keeps an up-to-the-minute record of the movement of every train on his district or division. His train sheet shows the names of the train crew and the number of the locomotive for each train. If he directs two trains to meet at a certain place, they must do so. In this way accidents are avoided and trains arrive and depart, meet and pass, safely and without confusion. Some dispatchers use telephones, some use telegraph, and some direct train movements through central control boards. The dispatcher must keep his mind on his work. He must be alert, accurate and dependable.



SIGNALS FLASH THEIR MESSAGES

33

Ahead of the locomotive in the large picture are several semaphore signals. In the small picture is an automatic block signal.

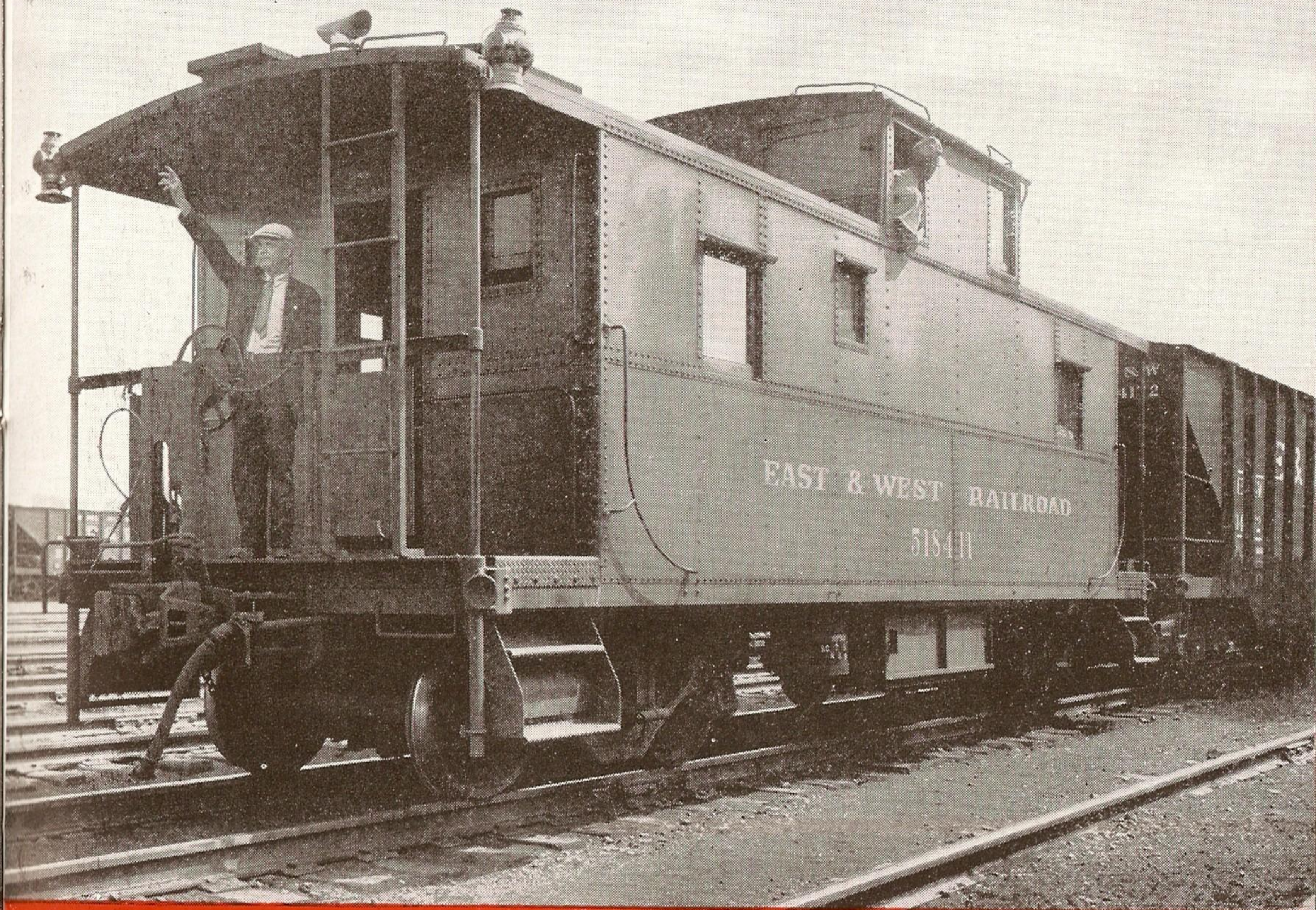
Signals are bearers of messages. Some signals, like those in the picture, have messages for the eye. Some signals—like the whistle of a locomotive or the ring of a locomotive bell—have messages for the ear. Men who run the trains know the language of the signals. Signals tell the locomotive engineer when to stop, when to go slow and when to go ahead at full speed. Many signals are operated electrically from signal towers or signal stations. Men who operate the signals must be alert and dependable.

Signals help to make the railroad train the safest form of transportation.



A FREIGHT TRAIN ON THE ROAD

Freight trains bring to our town or city the foods we eat, the fuel we burn, and the materials that are used in building and repairing our homes. They also bring us materials for the construction and repair of streets, bridges and public buildings. Freight trains help keep our factories supplied with the things they need. Our factories also depend upon freight trains to carry their products to distant markets. Thus, it is seen that freight trains play an important role in our community, our state and our nation. They form a link between farms and markets, between forests and mills, between mines and factories and between factories and retail stores. They bridge the gap between producer and consumer.



THE CABOOSE

35

At the end of each freight train is the caboose, with its odd-looking little watch tower, or cupola. The caboose is the train office and the traveling home of the train crew. Here the conductor has a desk where he keeps the way-bills, reports and other train papers and prepares a report showing the origin, destination and contents of the train.

Seated in the "bird's nest" within the cupola, the brakeman keeps watch of the long train of freight cars ahead and keeps an eye out for signals from the brakeman on the head end or from the engineer or fireman. The caboose has a stove for preparing meals, lockers for clothing, and places for flags, lanterns and emergency tools.



THE BRAKEMAN UNCOUPLES THE CARS

The brakeman, with his left hand, is pulling a lever that uncouples the cars. With his right hand he is signaling the engineer to go ahead.

A train crew is made up of a conductor, a locomotive engineer, a fireman, and one or more brakemen. On a passenger train the baggageman is also a member of the train crew.

The brakeman assists the conductor. He sees that everything needed for the trip is in place on the train. On local freight trains he helps to load and unload package freight at stations. He also helps to set out and pick up cars along the way.



LOADING A BOX CAR

37

The odd-looking little truck at the right is hauling a "train" of trailer trucks. Each trailer truck is loaded with packages and crates to go into the freight car at the left. The man in the car is stowing the packages and crates carefully. When the car is filled, the door will be closed and locked and the car will be ready for its long journey. This kind of a freight car is called a box car because it looks so much like a box on wheels. Freight cars are great wanderers. A car may be sent to any place in the United States, Canada or Mexico to deliver a shipment of freight or to pick up a load.



There are stations for freight as well as for passengers. The size of a freight station depends upon the amount of business to be handled. This is a picture of the interior of a large freight station. Little "trains" of trailer trucks pulled by small motor cars move the boxes, cartons, crates, cases and packages to the station platform to be loaded into freight cars. As cars are unloaded, the freight packages are trucked into the station, or they are hauled to another platform and loaded into motor trucks for delivery to the person or company to whom they are addressed. Many of the things which we buy in the stores come through our local freight station.



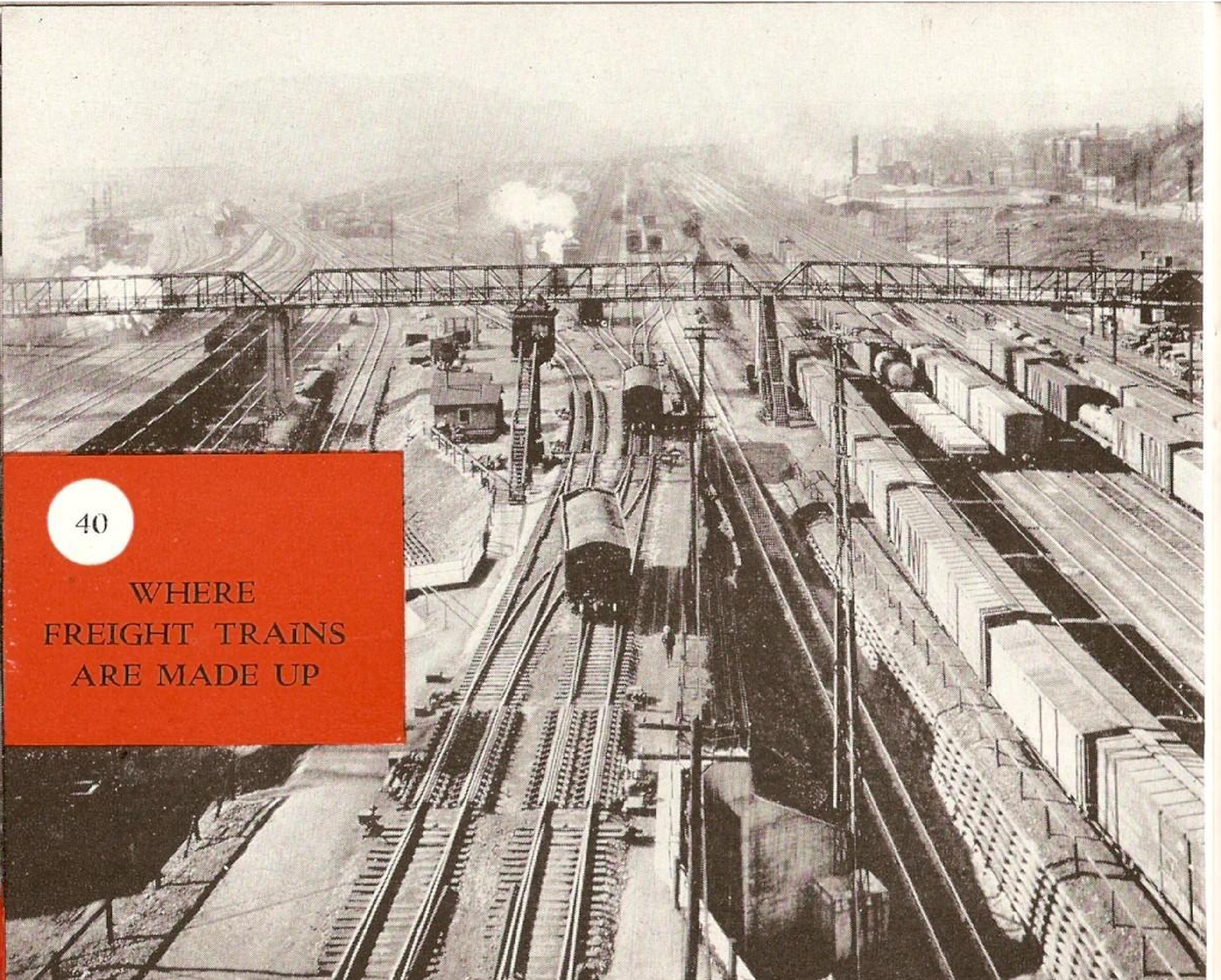
PICK-UP AND DELIVERY SERVICE

39

Years ago, if a local merchant wanted to send a package of freight by railroad, he had to deliver it to the freight station. If a package for the merchant was received at the station, a notice was sent to him. He then sent to the freight station for the package or went after it himself.

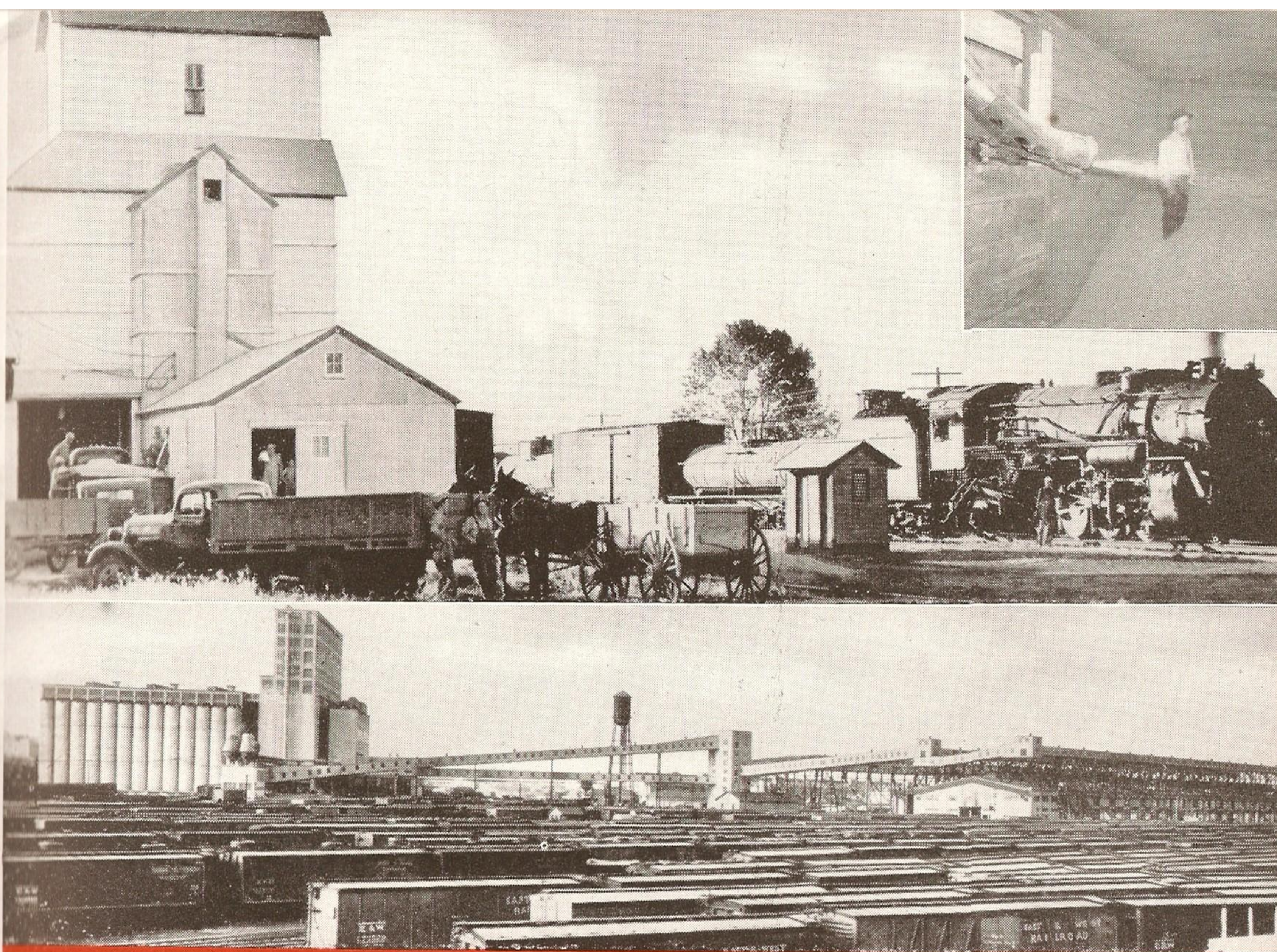
Many railroads now own or hire motor trucks which collect and deliver package freight and other small shipments at stores, factories and other places of business—in the same way that the Railway Express Agency collects and delivers express packages. This is called pick-up and delivery service. In this way the railroads have extended railway freight service to the doors of many places of business.

WHERE
FREIGHT TRAINS
ARE MADE UP



The freight yard is a busy place. Here freight trains are made up and broken up. The freight train starts its run from a freight yard and completes its run in another freight yard many miles away.

In the freight yard, cars are run over the "hump" and put in other trains. The "hump" is a track on a hill. When a car is "cut" from the train on the "hump" it runs down hill by gravity. A man in the tower sets the switches so that each car goes to the track where it is wanted. To slow down or stop the car he presses a button which causes car retarders in the track to press against the sides of the moving car wheels as they pass.

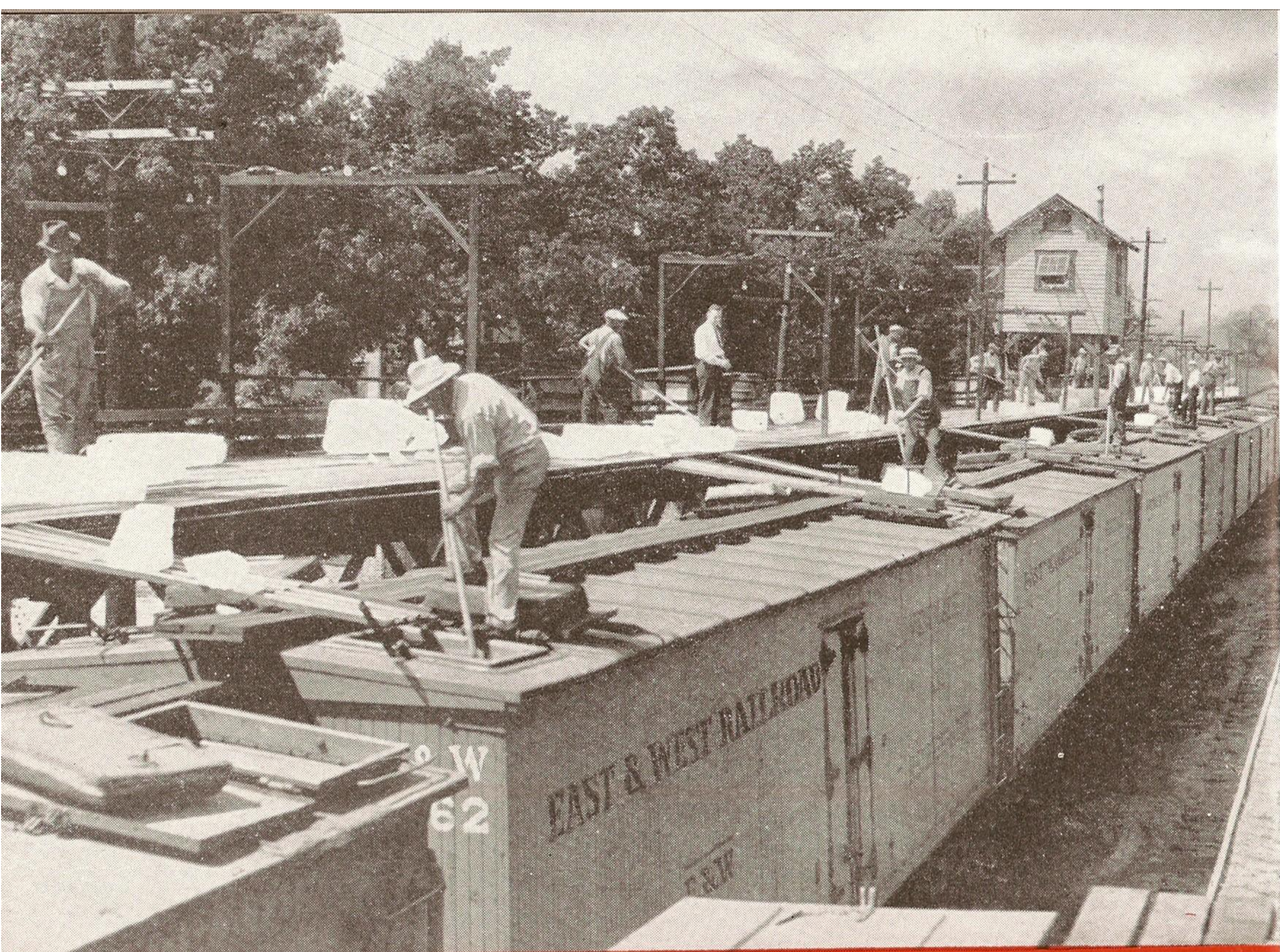


GRAIN GOES TO MARKET

41

Nearly every town in the grain belt has a tall grain elevator. It is usually called a country elevator to distinguish it from a terminal elevator. The country elevator is located on the railroad so that grain can be loaded directly into freight cars. Farmers bring wheat and other grains to the country elevator. The grain is lifted into the elevator bins by conveyors. From the bins it is poured or blown into freight cars through large tubes, as seen in the picture at the right.

Freight cars take the grain to a terminal elevator in the city. There it is cleaned, dried, and graded. Then it is again loaded into freight cars and taken to a mill to be made into flour, cereals or other grain products.



ICING THE REFRIGERATOR CARS

These are refrigerator cars. They serve the same purpose as refrigerators in our homes. They keep fresh fruits, vegetables, dairy products, meats, fish and other foods cold, so they will not spoil on the way to market.

The men in the picture are putting ice into the refrigerator cars. A movable chain belt brings ice from the ice house to the icing platform. The men then break the ice into small pieces and drop the pieces through trap doors, called hatches, into the ice bins or bunkers. The floor and walls of the car are built something like a thermos bottle—so that when the doors and hatches of the car are closed, the ice will keep the interior of the car cold for days.

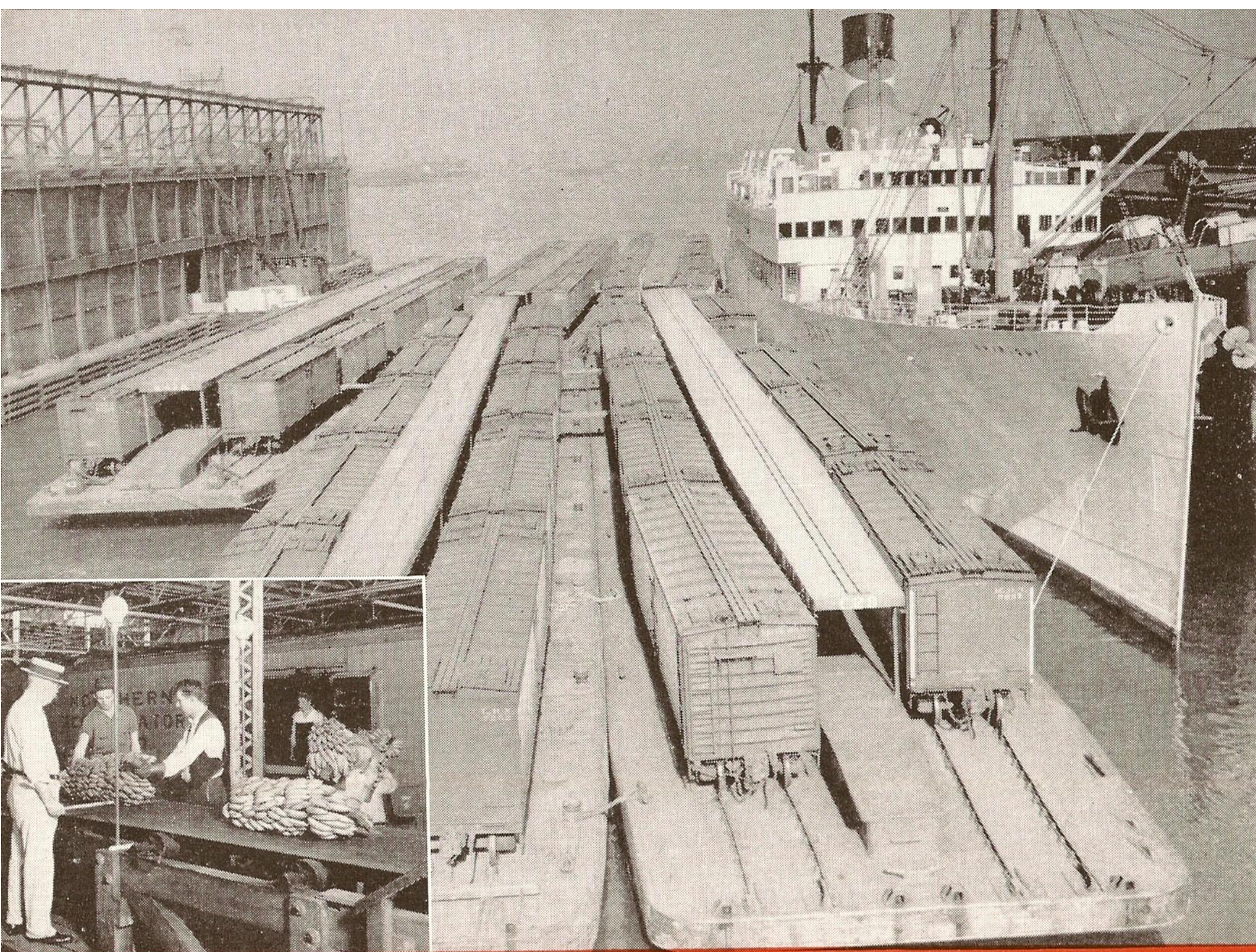


LOADING SPINACH INTO A REFRIGERATOR CAR

43

The men are unloading baskets of spinach from farm trucks and putting them into refrigerator cars. The white objects on the platform are cakes of ice. Ice is put inside the cars to keep the contents cold. Some ice cakes will be placed in bins at the ends of the car; some will be broken into small pieces and put on or between the baskets of spinach.

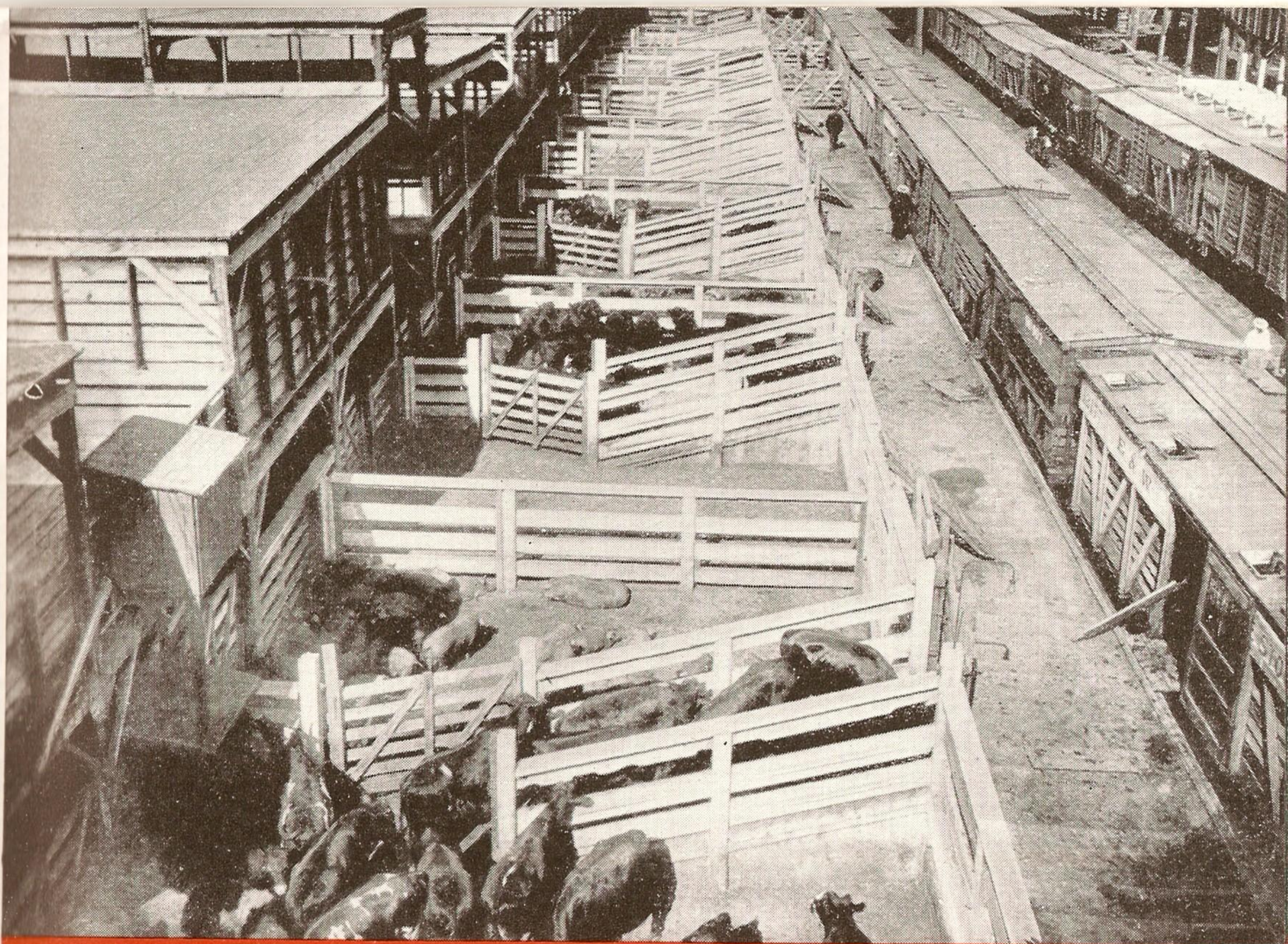
If it were not for refrigerator cars, fruits, vegetables, fresh meats, butter, eggs, milk and fish could not be shipped long distances. Refrigerator cars make it possible for farmers in any part of the United States to market their products in any other part of the country, and even in Canada. We enjoy more and better food because of railway service.



BANANAS COME BY SHIP AND RAIL

Bananas travel thousands of miles to reach our tables. Most of the bananas we eat grow in Central America, the north coast of South America and the West Indies. They are first shipped over little railroads to the seaports; then by steamships to our ports; then over our railroads to the cities and towns where they are consumed.

Sometimes bananas are unloaded from a steamship to refrigerator cars on large car floats, or "lighters," as seen in the picture. The floats are then towed to another dock, their tracks are connected with railroad tracks, and the cars are hauled away. On long trips bananas are shipped in refrigerator cars. Sometimes one ship will bring enough bananas to fill two or more trains.

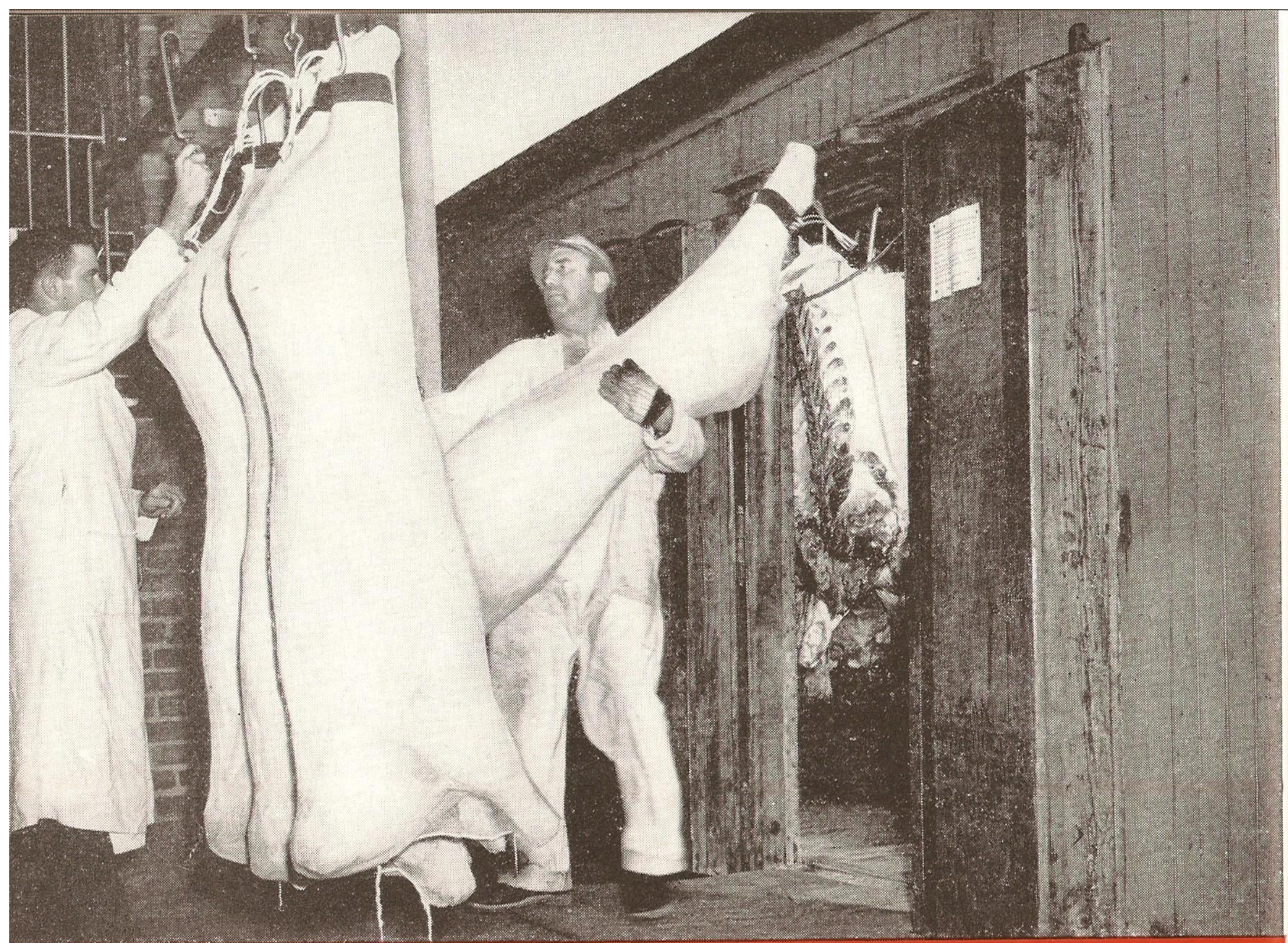


LIVESTOCK ARRIVING AT THE STOCKYARDS

45

Our railroads carry cattle, calves, hogs, sheep and lambs from the farms to the stockyards in the cities. Stock cars used for this purpose are like box cars except that the side walls are made of slats set two or three inches apart to give the animals plenty of fresh air. Many cars that carry hogs and sheep have two decks. Cars used for carrying poultry have sides of wire net and several decks.

Animals and poultry on their way to market are fed, watered and looked after by caretakers who travel on the train. On long journeys, the animals are removed from the train somewhere along the way and kept for several hours in "resting pens."



FRESH MEATS ON THE WAY TO MARKET

Fresh meats are chilled or frozen in meat packing plants and wrapped before being loaded into cars. In the picture men are loading sides of beef into refrigerator cars. Refrigerator cars used for carrying meats are similar to those used for carrying fruits and vegetables except that they are equipped with steel bars upon which to hang the meat. Often ham, bacon, sausage, butter, eggs, dressed poultry and other food products are loaded and shipped in the same car with fresh meats.

Before there were refrigerator cars, fresh meats could not be shipped long distances without spoiling. Today railroads bring us fresh meats and other perishable products no matter how far we may live from the places where they are produced.

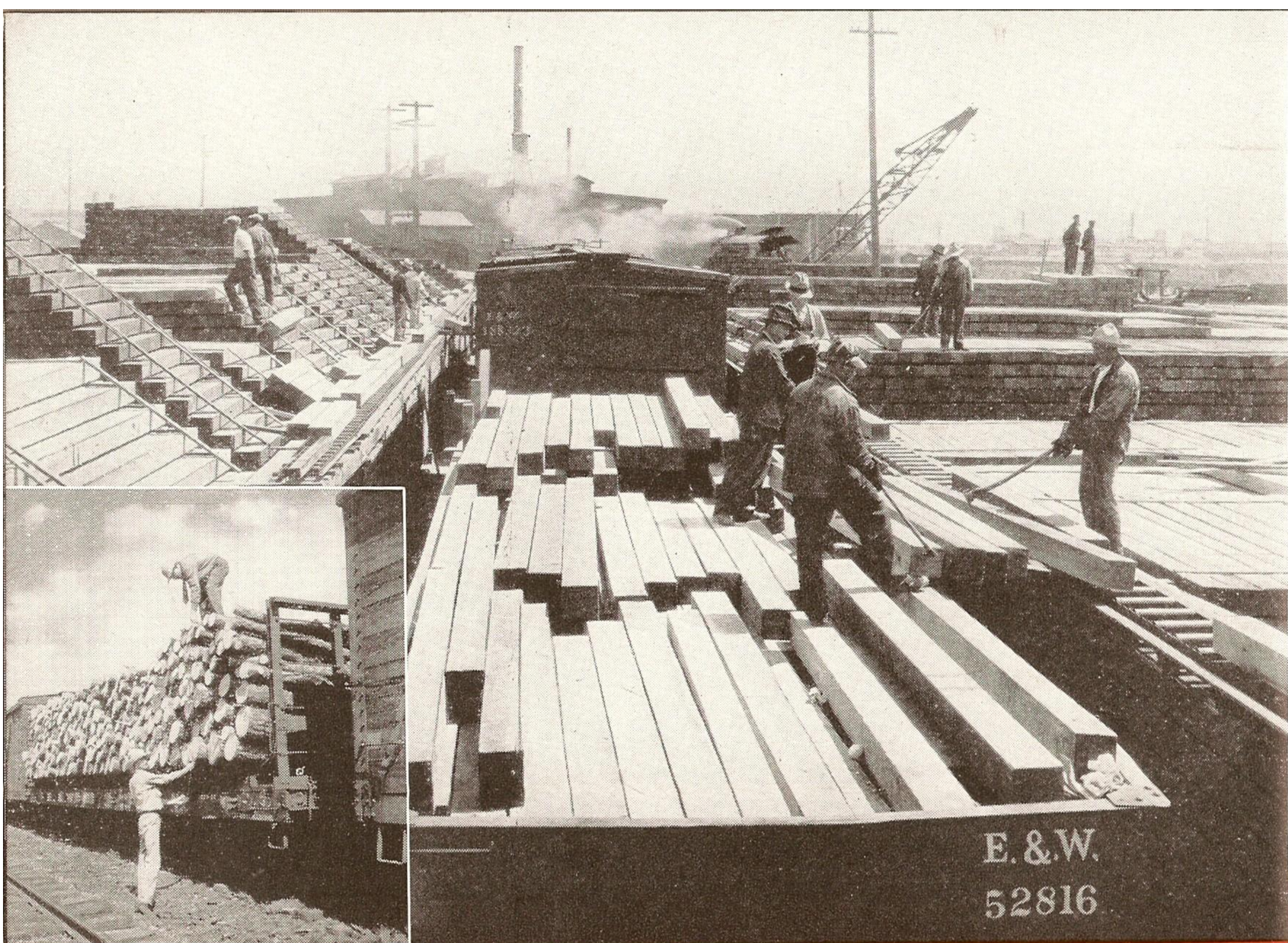


BRINGING MILK TO THE CITY

47

Millions of Americans depend upon the railroads to bring their daily supply of fresh milk and cream. In many instances, milk and cream are carried hundreds of miles to market. Philadelphia, for example, receives milk from as far south as Maryland and cream from as far west as Wisconsin.

Milk and cream require the utmost care from the time they leave the farms until they reach our tables. They must be kept perfectly clean. They must be kept cold, but not too cold. Some milk is transported in insulated glass-lined steel tank cars; some is shipped in large cans like the ones in the picture. Cars are sometimes fitted with shelves so that the cans can be loaded in tiers.

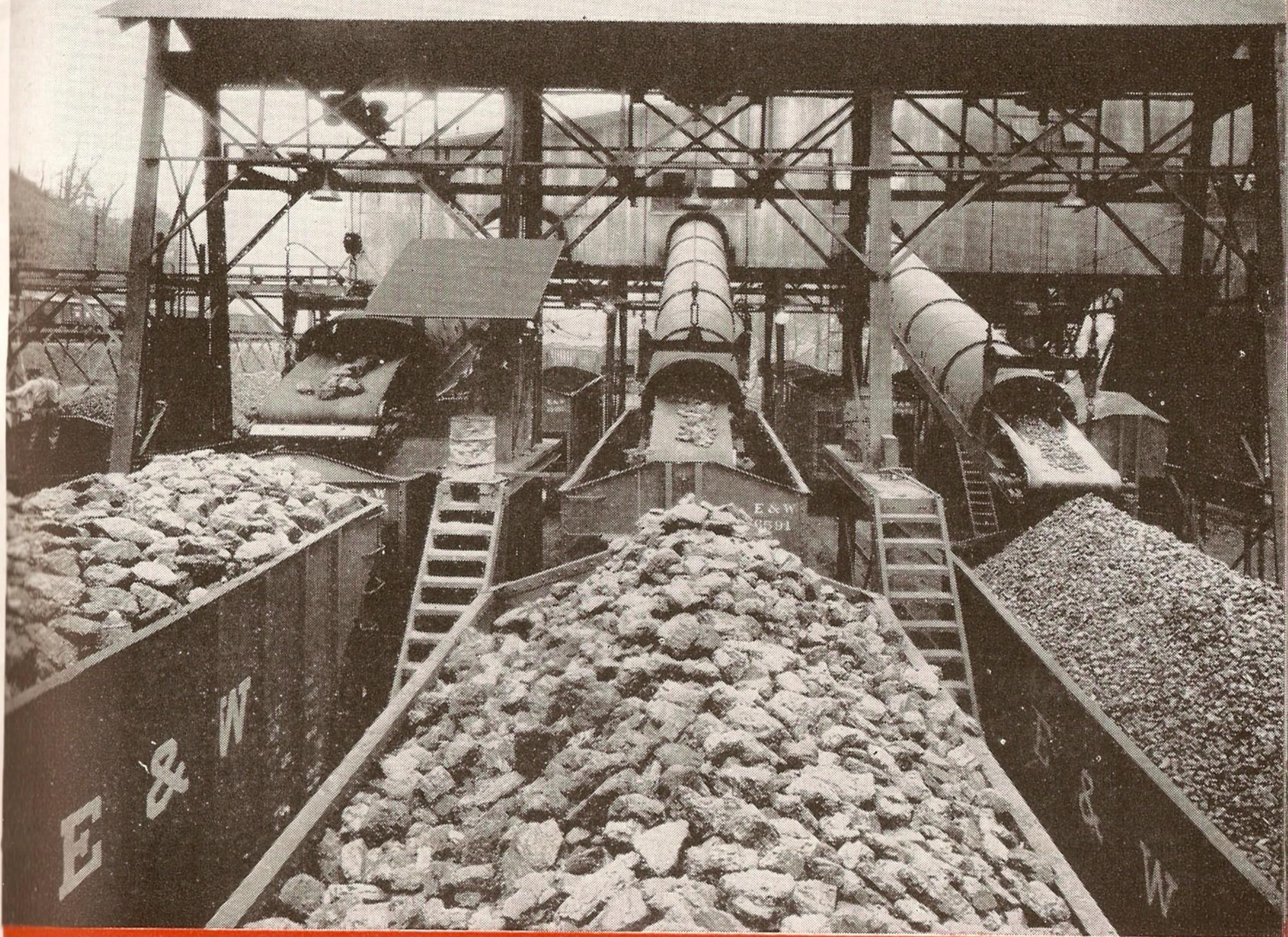


FOREST PRODUCTS MOVE BY RAIL

The forest industry is a large user of transportation. After trees are felled and trimmed in the forest, they must be taken to the mills. Then the lumber and other products of the mills must be taken to the places where they are needed. Railroads take things from places where they are not needed and deliver them to places where they are needed.

In the large picture, lumber from the mill is being unloaded from freight cars and stacked in neat piles in the lumber yard. Each pile in the yard is made up of lumber of a certain size.

The small picture shows a carload of pulpwood being made ready for shipment to the paper mill. Lumber is usually loaded on flat cars, in box cars or gondola cars.

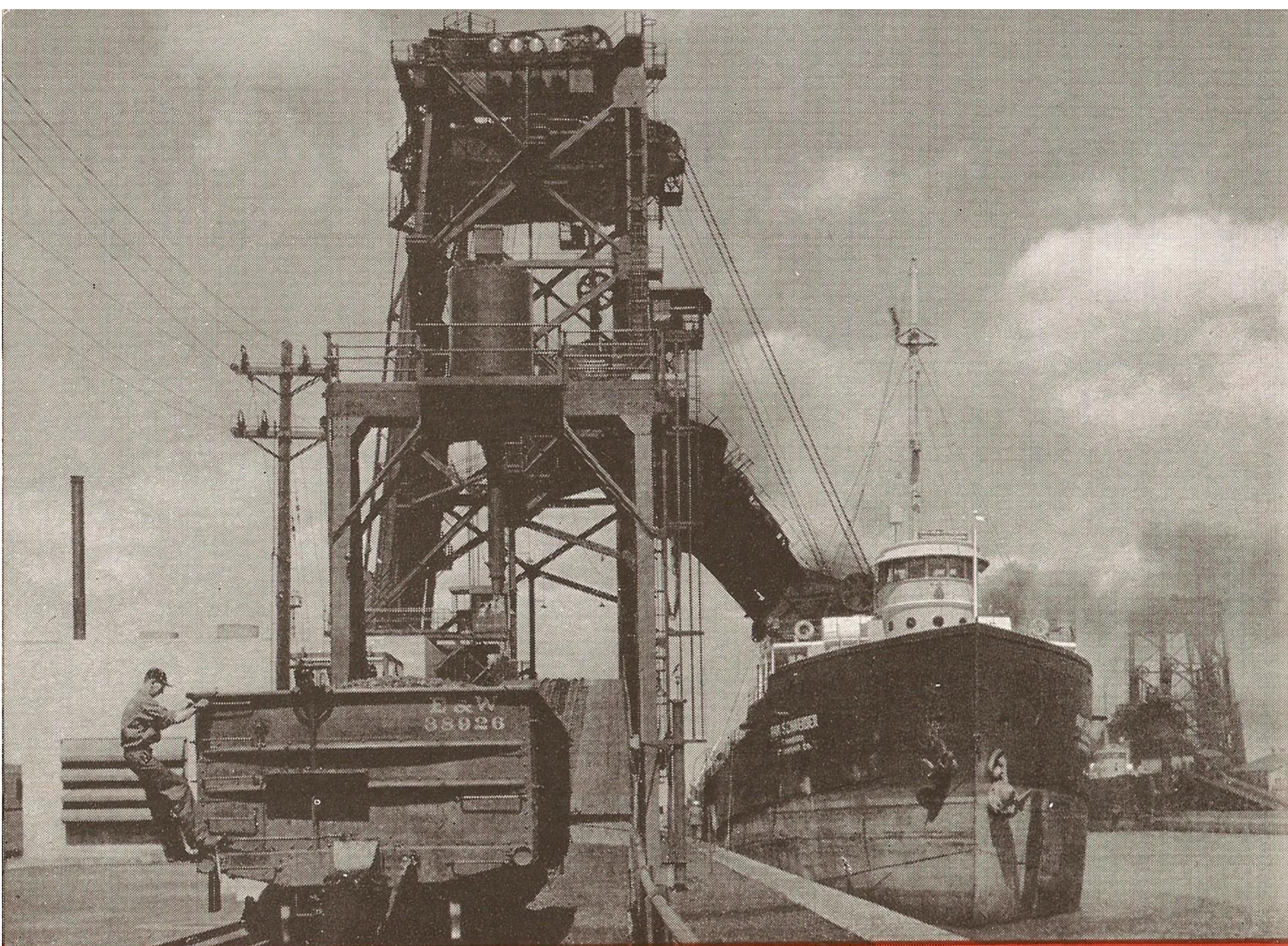


LOADING COAL CARS AT THE MINE

Coal mines and railroads work together. Each depends upon the other. Coal mines help the railroads by supplying them with fuel for their locomotives, shops, stations and offices, and by furnishing them with coal to haul.

Railroads help the coal mines by bringing them machinery, tools, and other supplies, by purchasing large quantities of coal for railroad uses, and by hauling coal to places where it is needed.

In this picture, coal is being loaded into freight cars at the mine. Both hopper cars and gondola cars carry coal. The average car holds about 55 tons. Railroads take the coal—sometimes for hundreds of miles—to factories and mills, to railroad coaling stations, to coal yards in cities and towns and to seaports and lake ports.



DUMPING COAL FROM CARS INTO SHIPS

Many years ago a large crew of men toiled for days and days to take coal from cars and load it into the hold of a ship. The modern way is to use a coal dumping machine like the one in the picture.

This machine grips a loaded coal car firmly, lifts it 50 or 75 feet above the track, and then turns it over, dumping the coal into a "pan" attached to a chute leading to the ship's hold. The empty car is then returned to the track, and as soon as it is pushed out of the way, another loaded car is brought into position for dumping in the same manner. The astonishing thing is that all of this takes only about a minute.

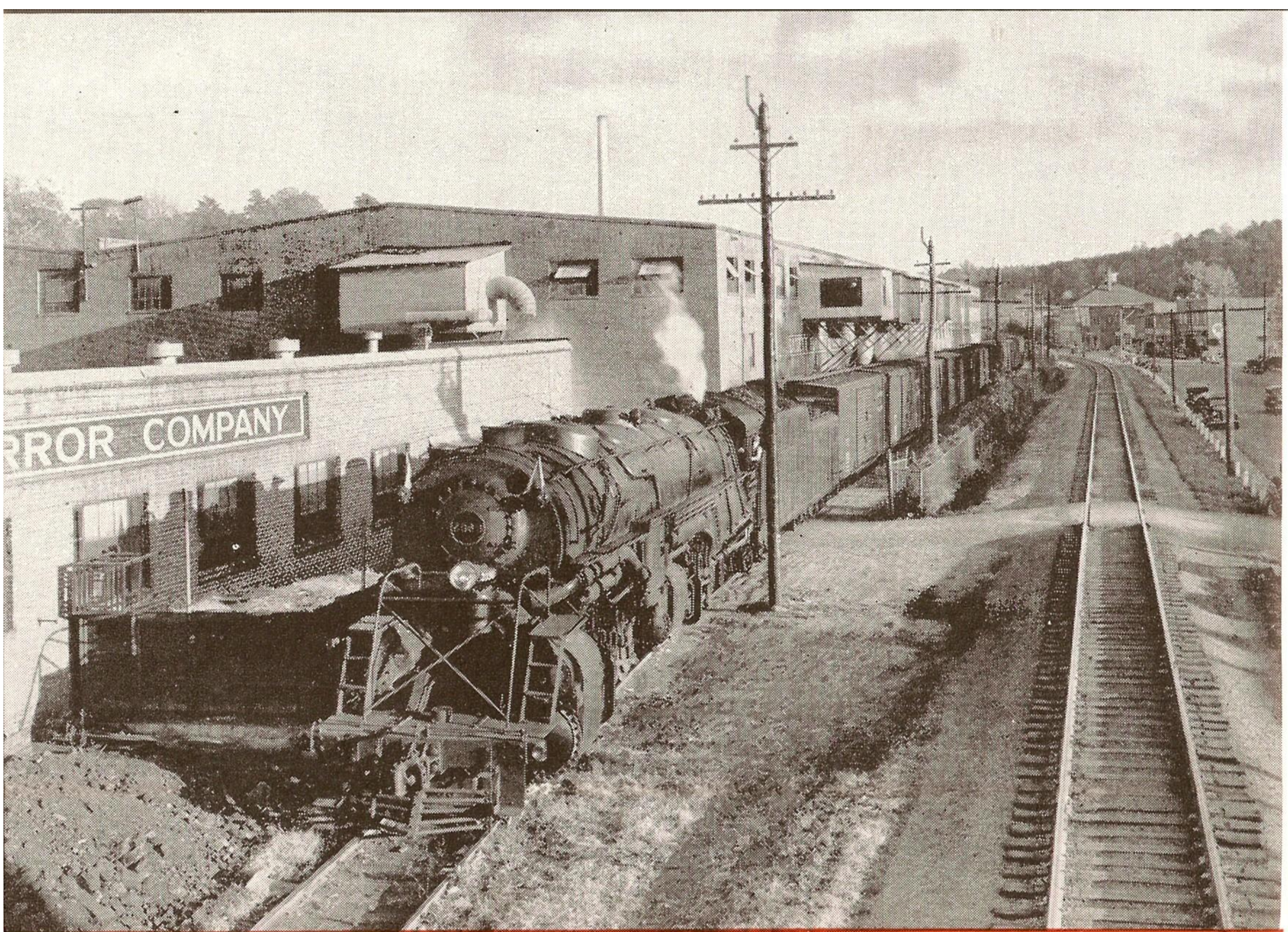


RAILROADS SERVE THE SEAPORTS

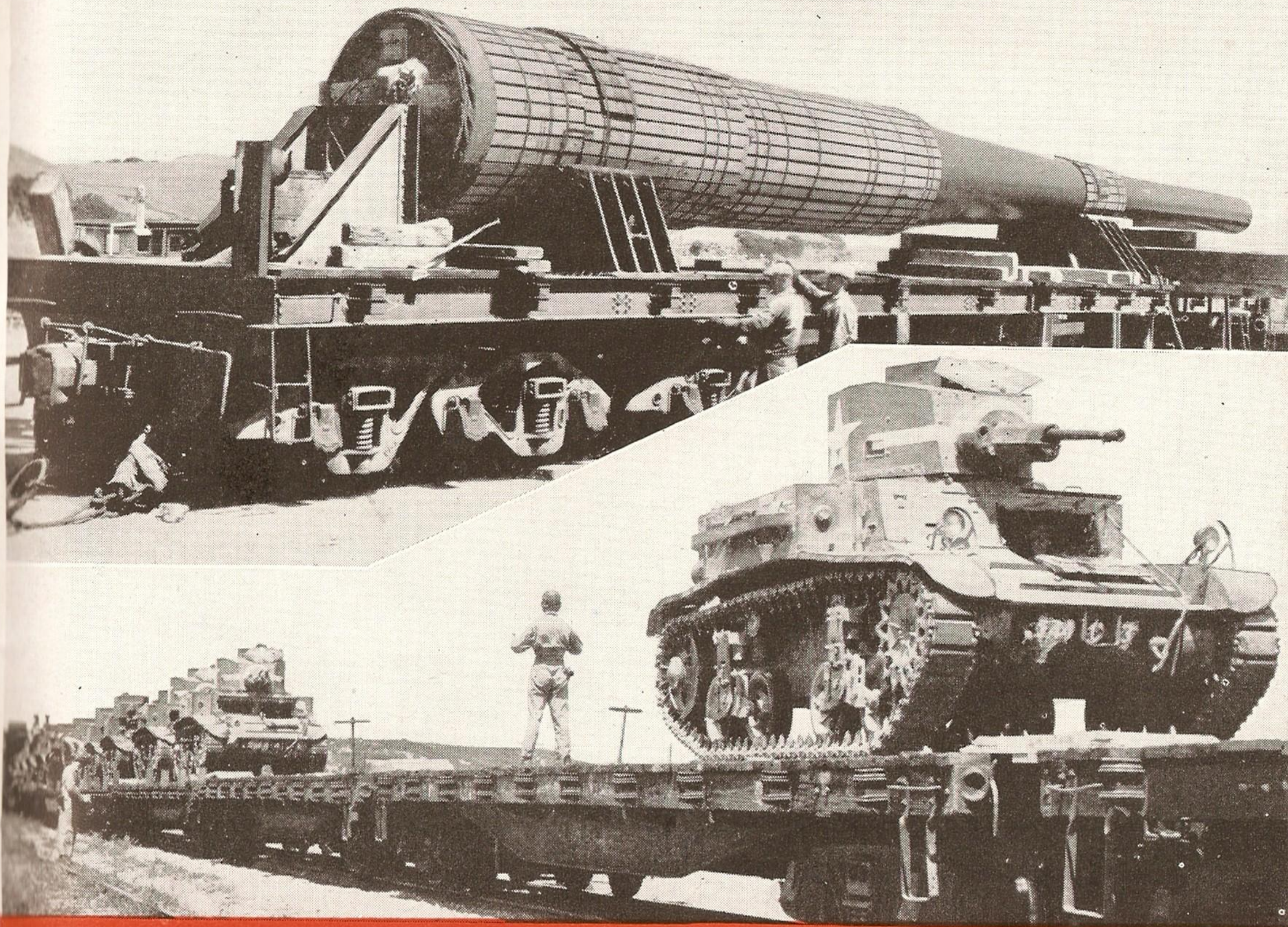
51

The United States trades with nations all over the world. Thousands of ships are employed to carry the products of our farms, forests, mines and factories to other lands and to bring us the many things from other lands which we need. Many trainloads of freight arrive and depart at our seaports each day.

This picture shows phosphate being unloaded from ships into freight cars on a railroad dock. The dock is where freight is transferred from ship to car or from car to ship. At every seaport the railroads have freight yards and warehouses. Many railroads have their own docks and other buildings.



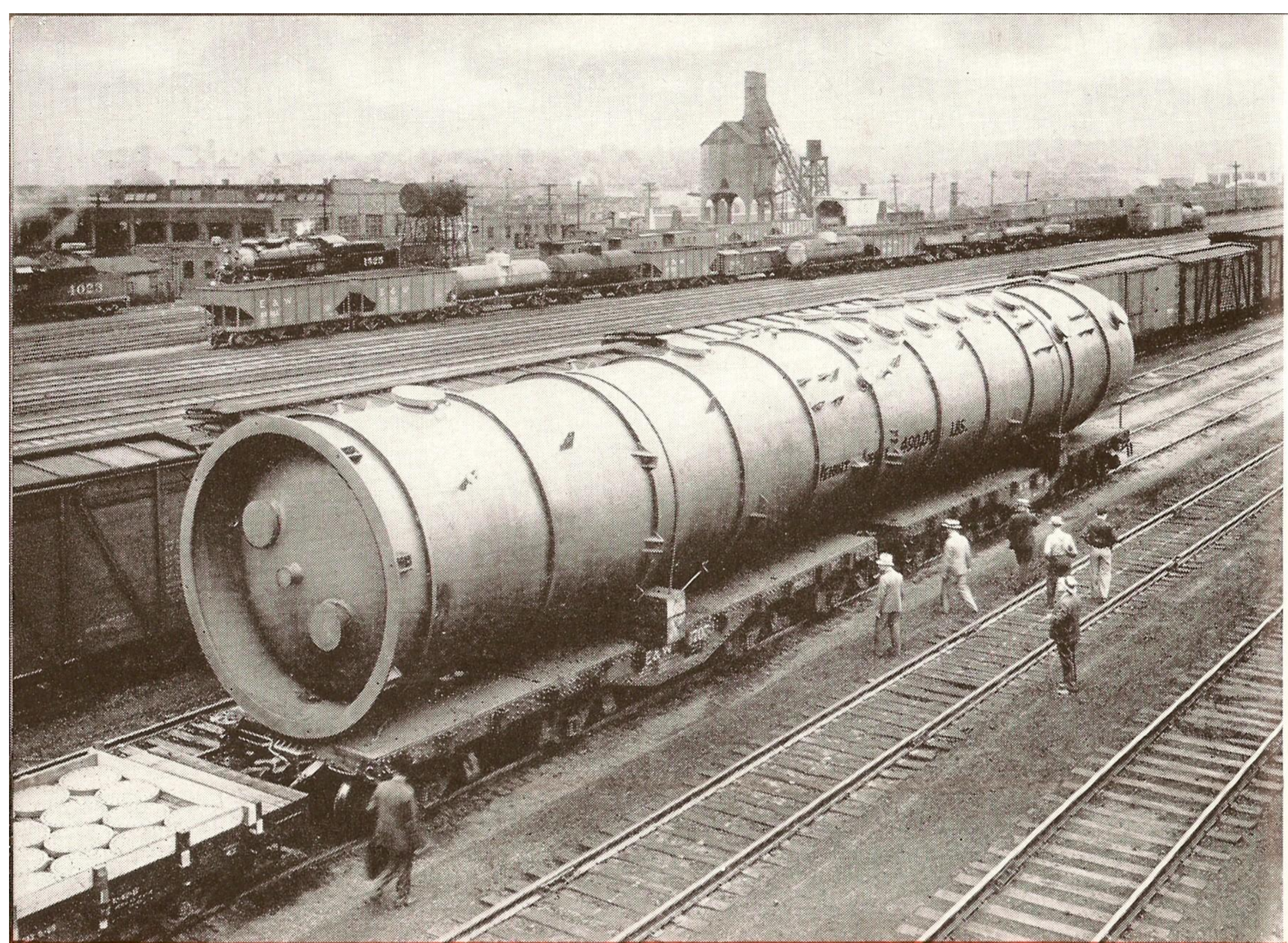
Nearly every important factory or mill is located on a railroad, as this one is. The railroad and the factory work together. Neither one could get along without the other. The railroad brings fuel and raw materials to the factory, and takes the products of the factory to markets, far and near. To make one article—such as a bicycle, a sewing machine or a radio—dozens of different materials are needed, and these may come from places hundreds of miles away. Often the parts are made in different factories in different cities and assembled in a factory in still another city. Railway transportation makes this possible. Railway tracks sometimes run directly into a factory where cars can be loaded and unloaded conveniently.



SPEEDING MILITARY EQUIPMENT BY RAIL

53

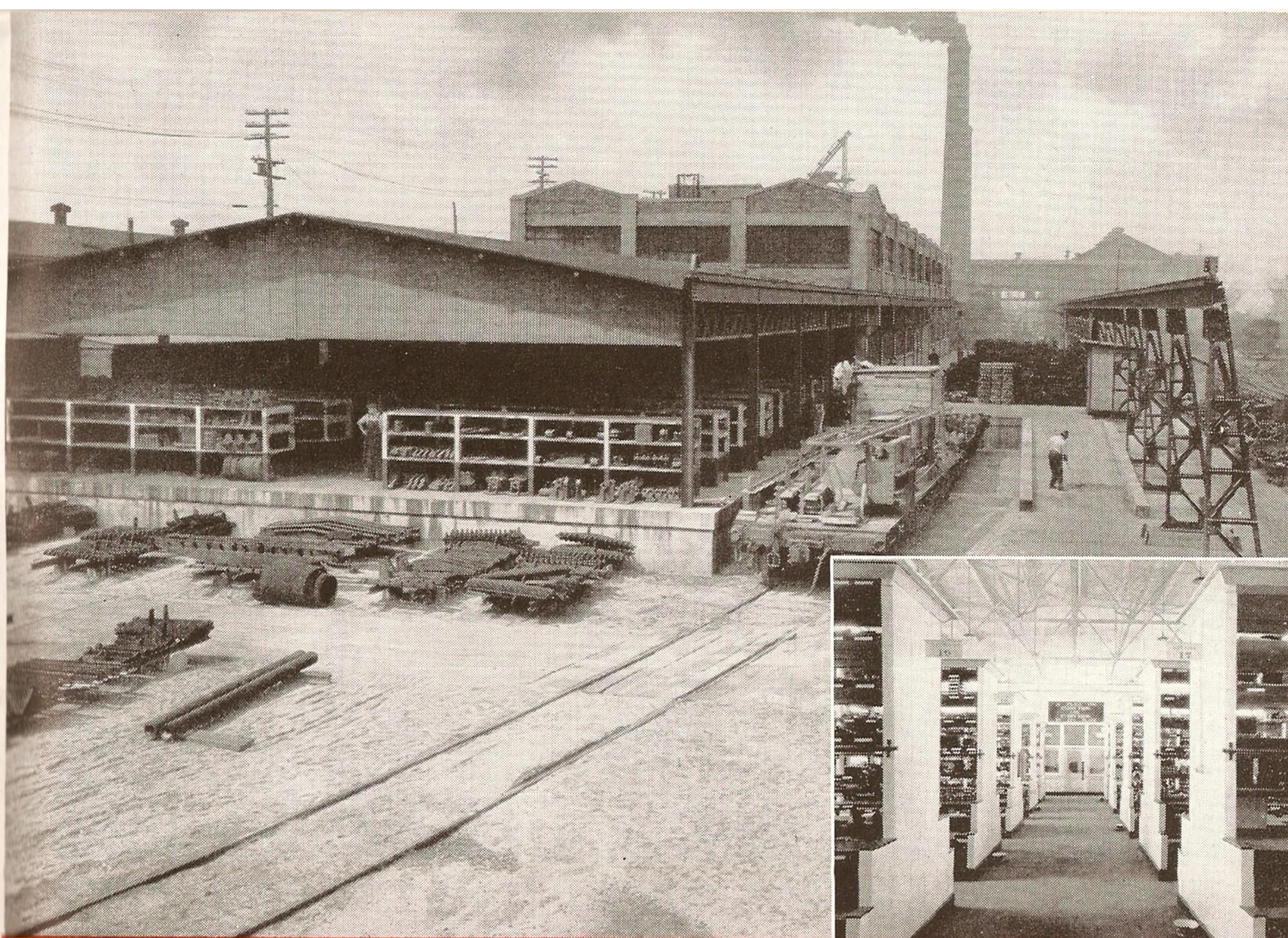
In time of war the railroads are the vital lifelines of the nation. In addition to carrying soldiers, sailors, marines, WACS, WAVES, wounded soldiers and prisoners of war, they deliver millions of carloads of materials and supplies to Army camps and bases. Railroads bring raw material to our mills, arsenals and manufacturing plants, and they take the products of mills and factories and arsenals to Army and Navy bases and to the seaports for forwarding to our allies and to our armed forces on the seas and overseas. We could not wage a war successfully without the services performed by our railroads.



The railroads are equipped to handle any and every kind of shipment—big or little.

The huge steel bubble tower in the foreground is 91 feet long, 18 feet in diameter, and weighs 490,000 pounds. It was shipped by railroad from a manufacturing plant in Missouri to an oil refinery in Texas. Railroads have carried steel bridge girders up to 156½ feet in length.

Among the many big unit shipments handled by the railroads are engines and turbines for steamships, guns for the Army and Navy, generators for power plants and heavy machinery for mines, automobile factories, steel mills and other manufacturing plants.



A RAILROAD STOREHOUSE AND MATERIAL YARD

55

All sorts of things are needed to keep our railroads running. In fact, our railroads buy and use thousands of different items. They use oil, tools and machines. They use food products in dining cars and restaurants. They use iron and steel products, forest products, and a wide variety of manufactured products.

The railroad storehouse resembles a big hardware store. It is filled with tools of many kinds—all neatly kept in shelves as seen in the picture at the lower right. In the storage yard outside are wheels, pipes, springs, bars and other things which are needed to keep the railroad and its locomotives and cars in repair.

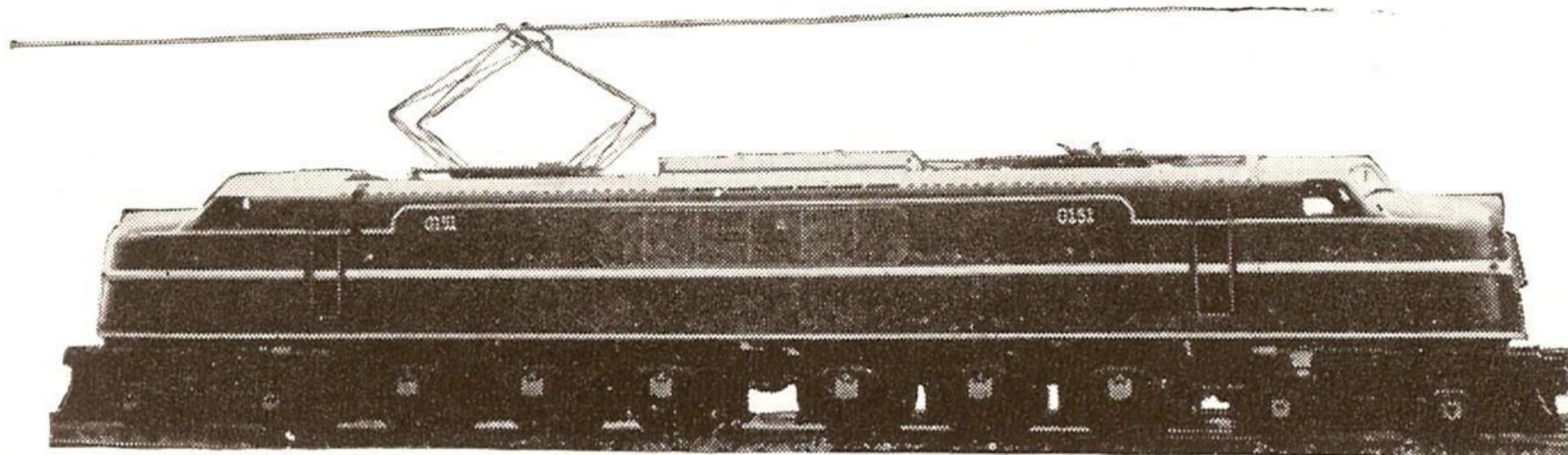


The general offices of a railroad company are usually made up of several departments—the Executive Department, the Operating Department, the Engineering Department, the Mechanical Department, the Traffic Department, the Law Department, the Treasury Department, the Accounting Department, and the Purchases and Stores Department.

The picture gives us a glimpse of the Accounting Department, where the railroad's records are kept and the bookkeeping is done.

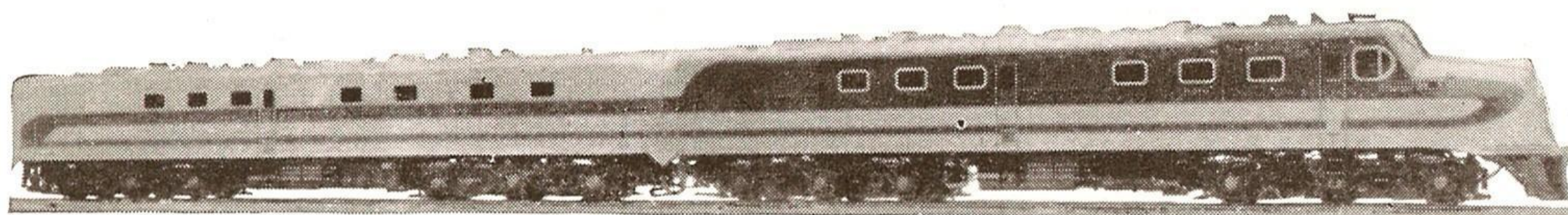
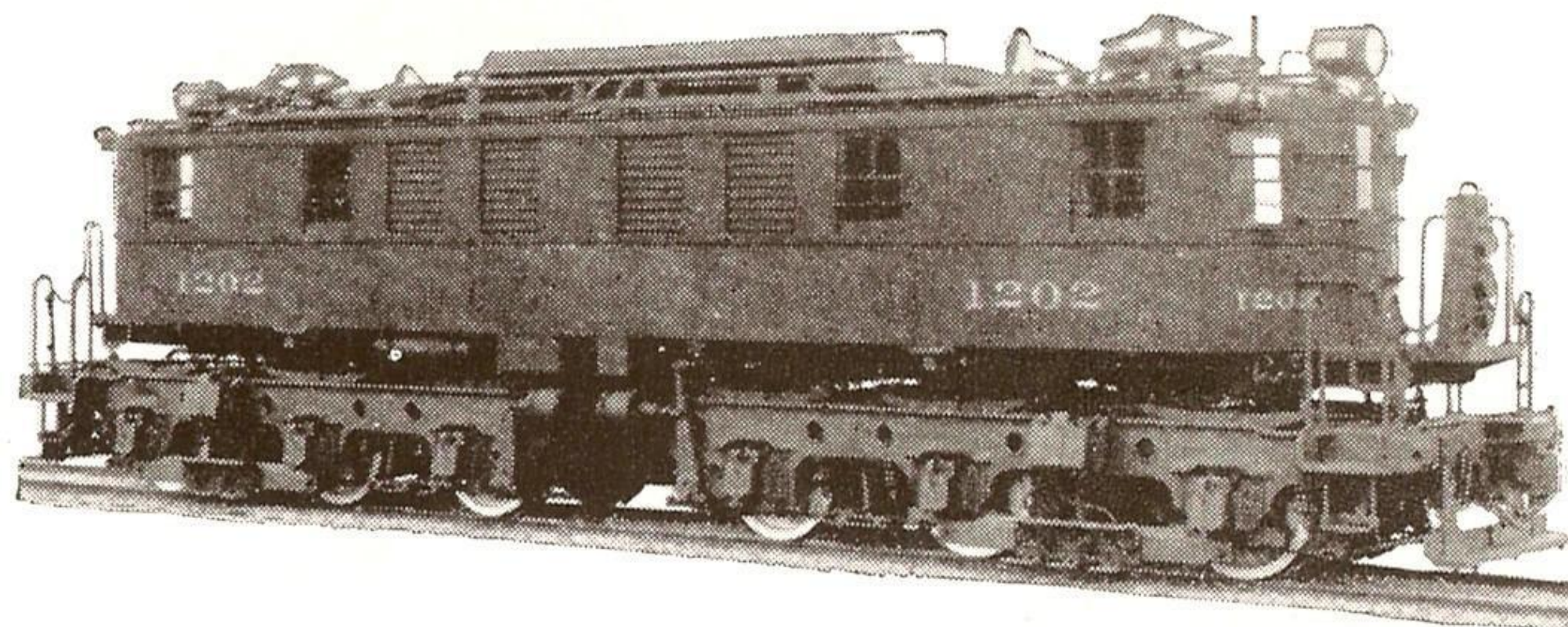
A large railroad is divided into several operating divisions, each in charge of a division superintendent. The headquarters of the division superintendent and his staff is known as the division office. There is also an office in every freight and passenger station on the railroad. Altogether, there are at least fifty thousand railway offices—large and small—in the United States.

ELECTRIC AND DIESEL-ELECTRIC LOCOMOTIVES

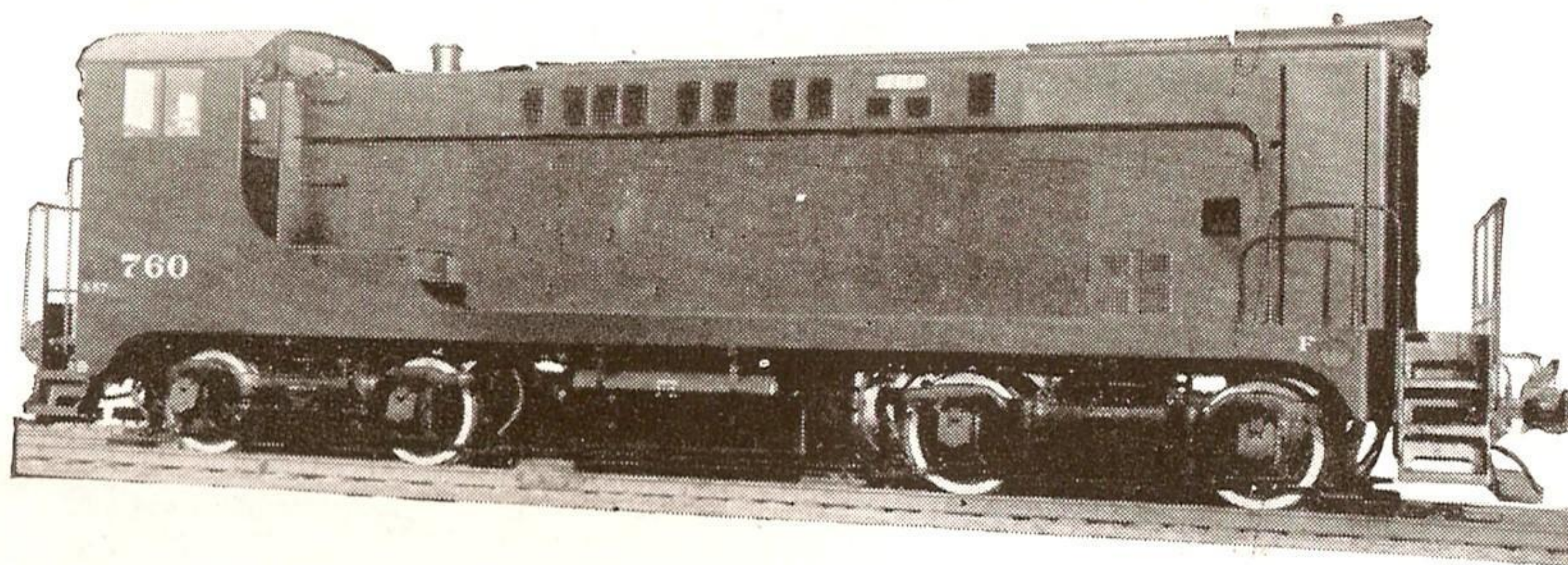


Electric
Locomotive
(2C + C2)

Electric
Locomotive
(C + C)

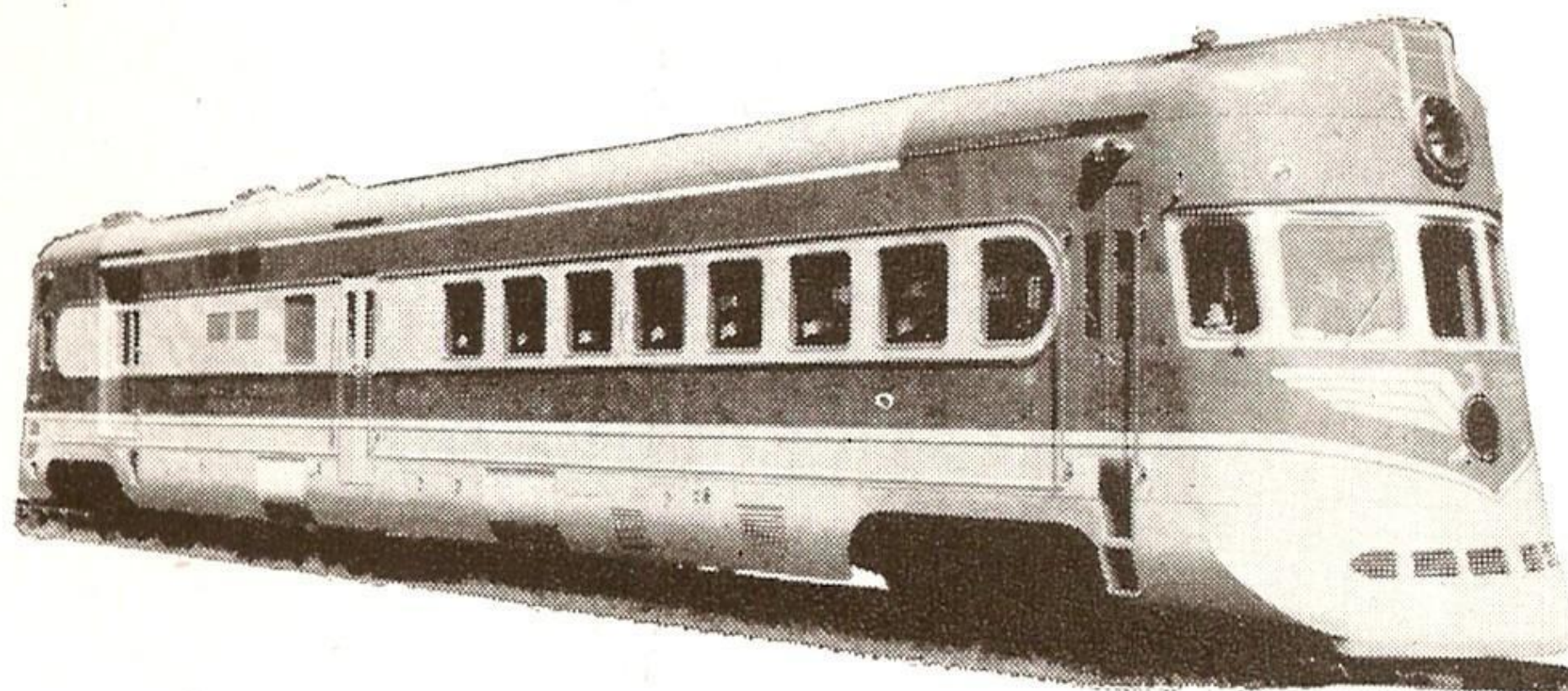


Diesel-Electric Road Locomotive

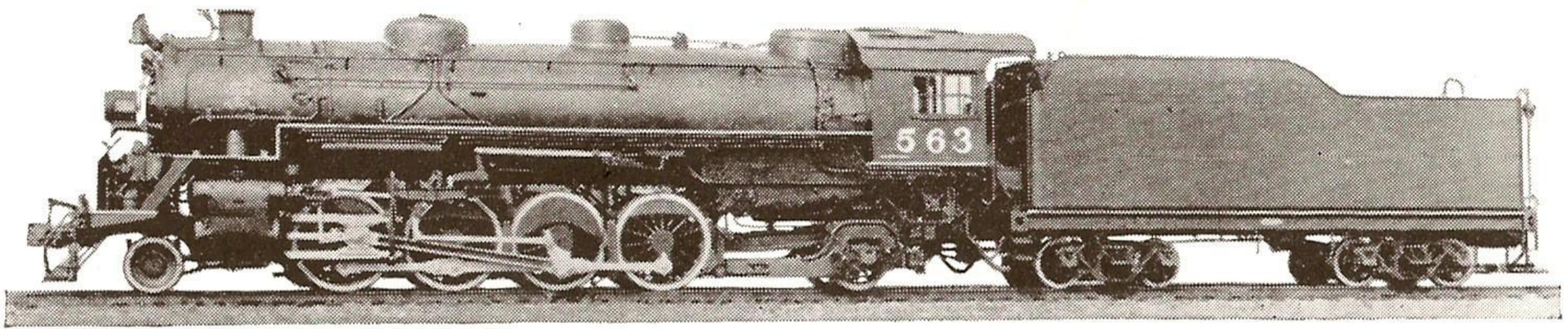


Diesel-Electric
Switching
Locomotive

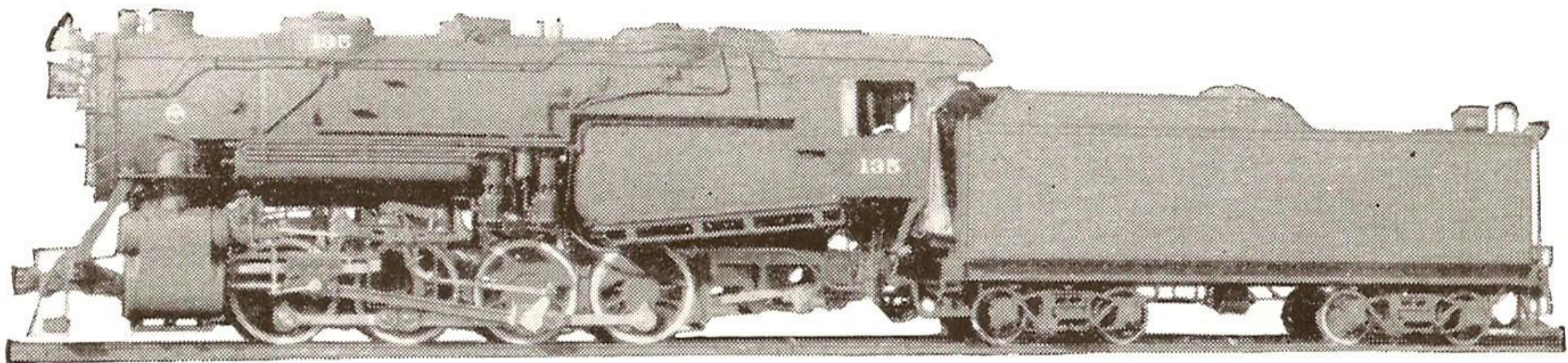
Diesel
Motor
Rail
Car



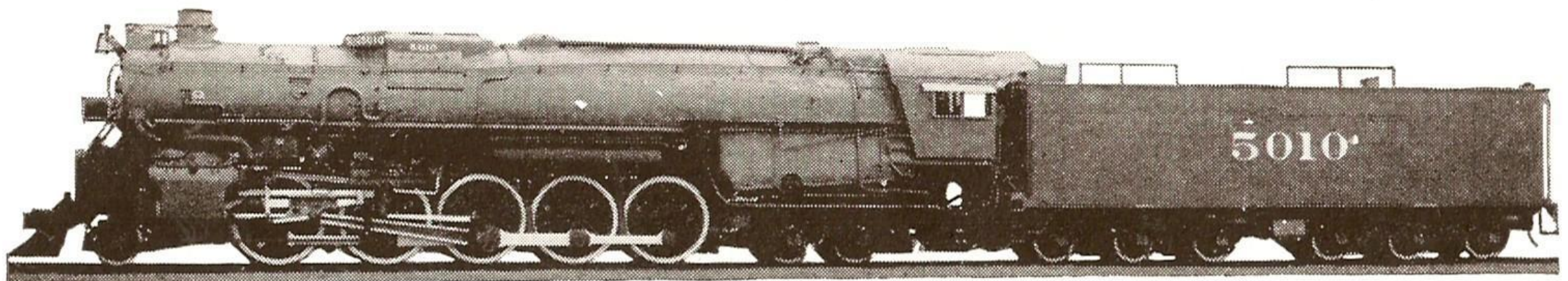
STEAM FREIGHT LOCOMOTIVES



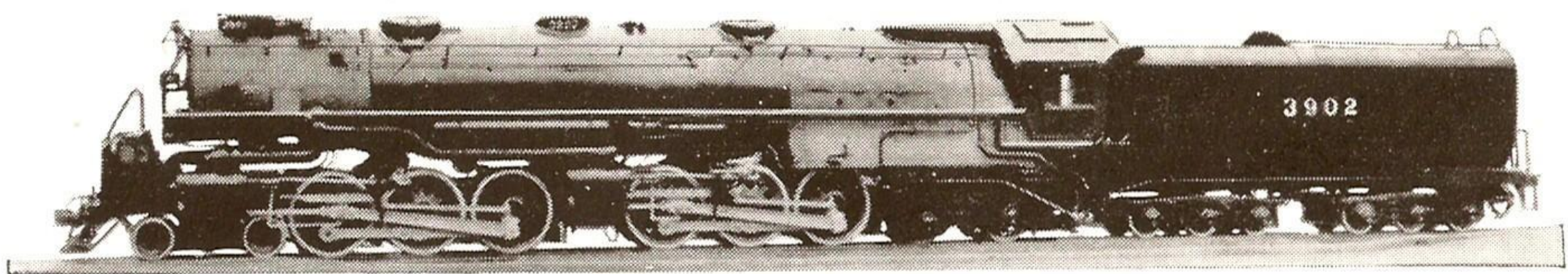
2 - 8 - 2 (Mikado)



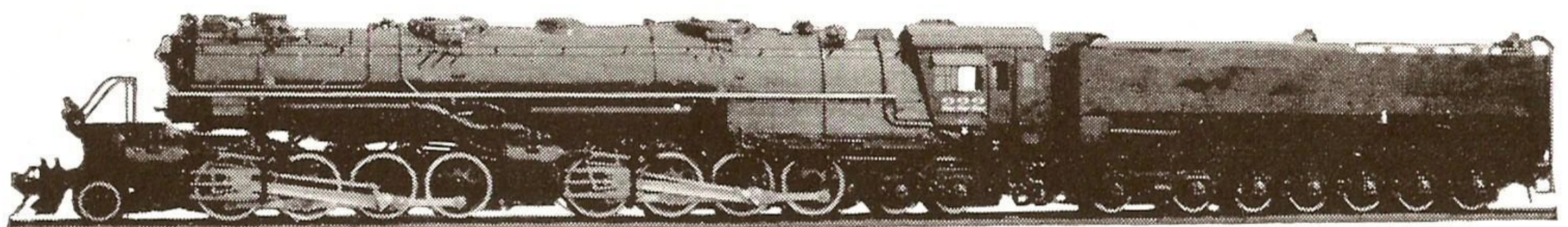
0 - 8 - 0 (Eight-wheel Switcher)



2 - 10 - 4 (Texas)

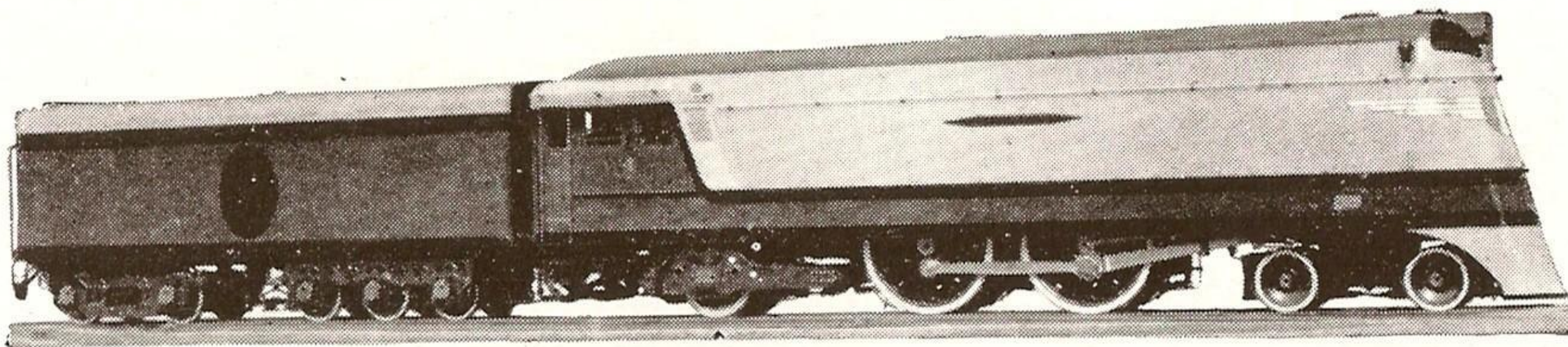


4 - 6 - 6 - 4 (Challenger)

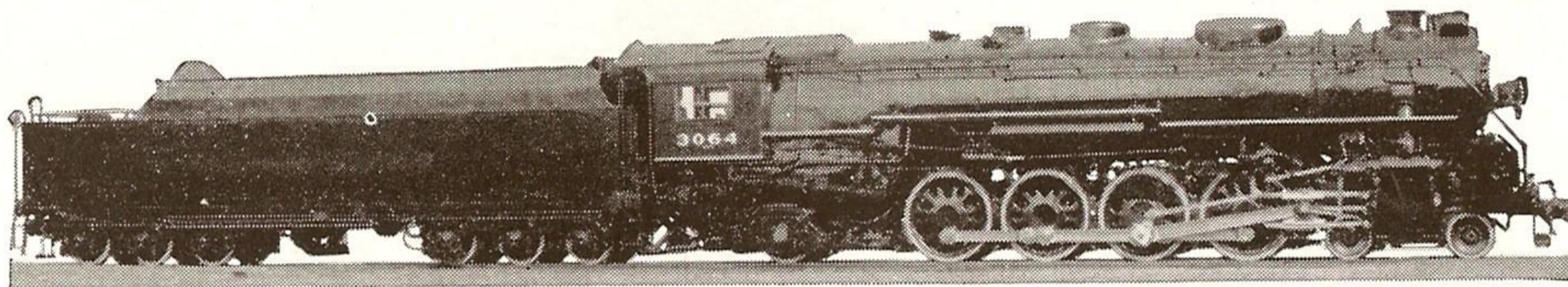


2 - 8 - 8 - 4 (Yellowstone)

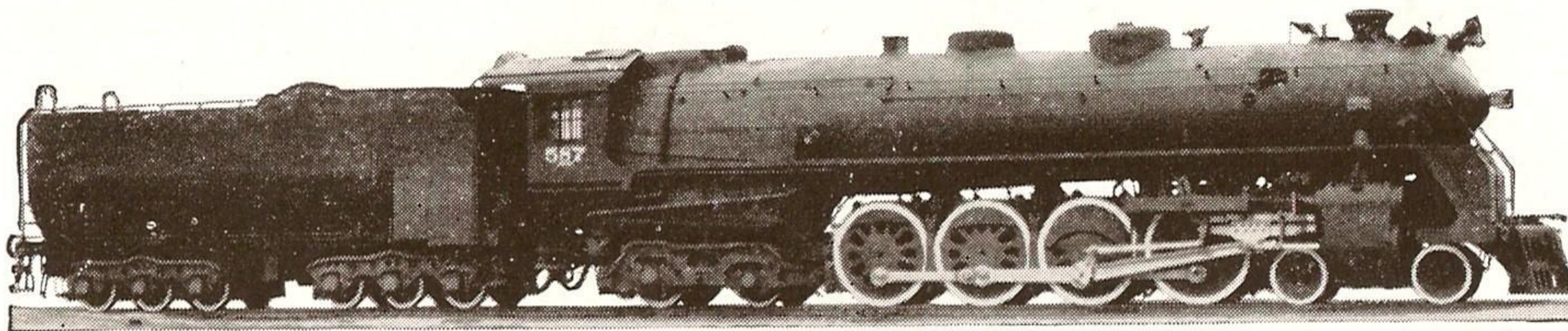
STEAM PASSENGER LOCOMOTIVES



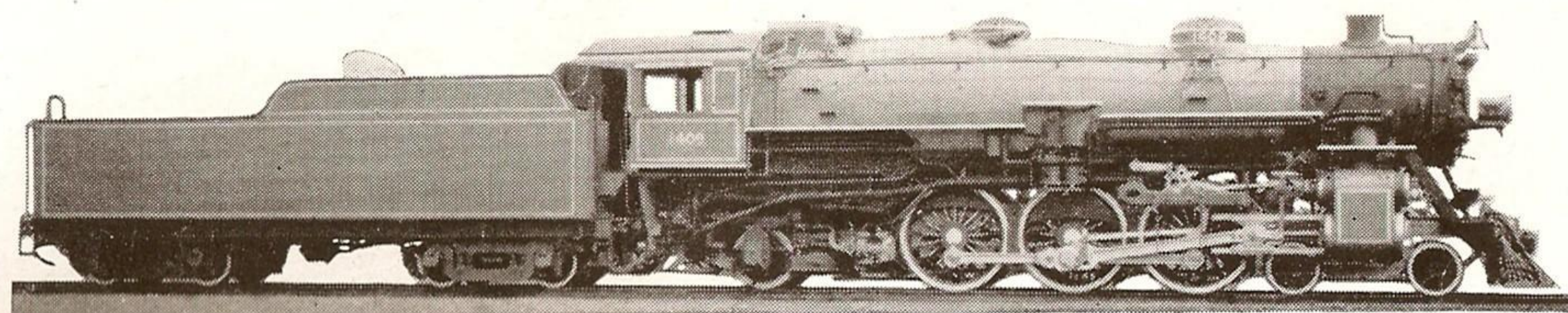
4 - 4 - 2 (Atlantic)



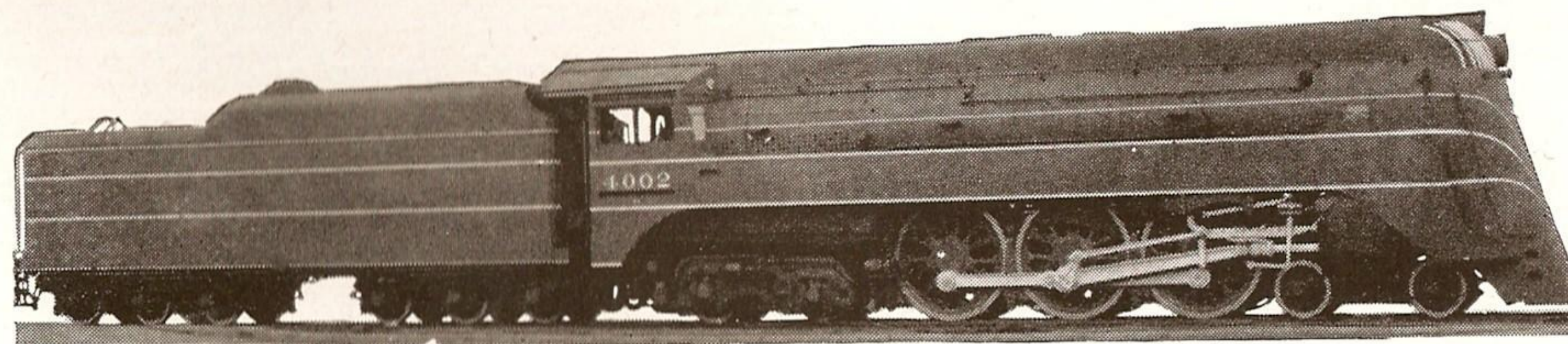
4 - 8 - 2 (Mountain)



4 - 8 - 4 (Northern)

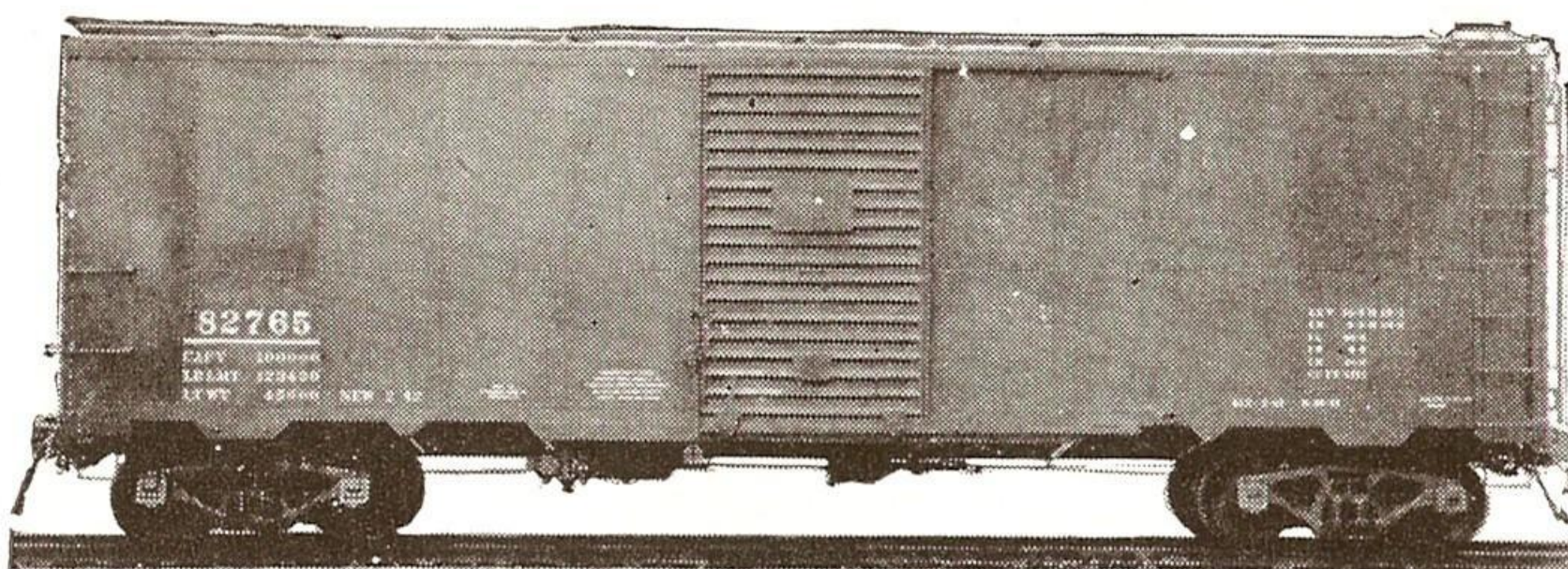


4 - 6 - 2 (Pacific)



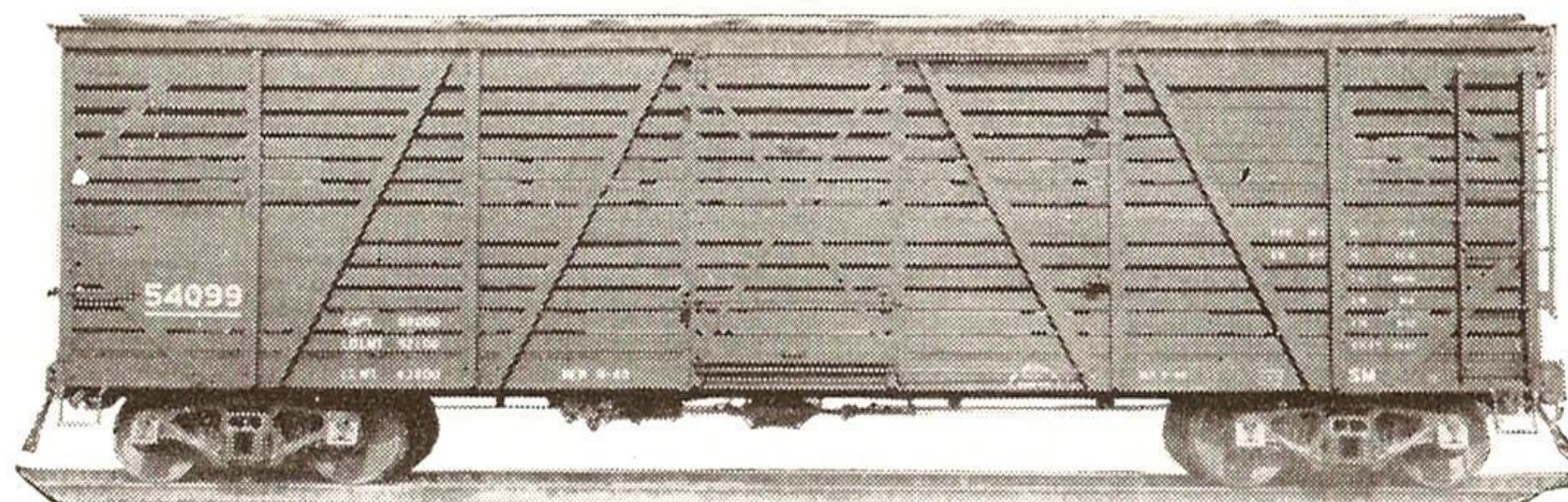
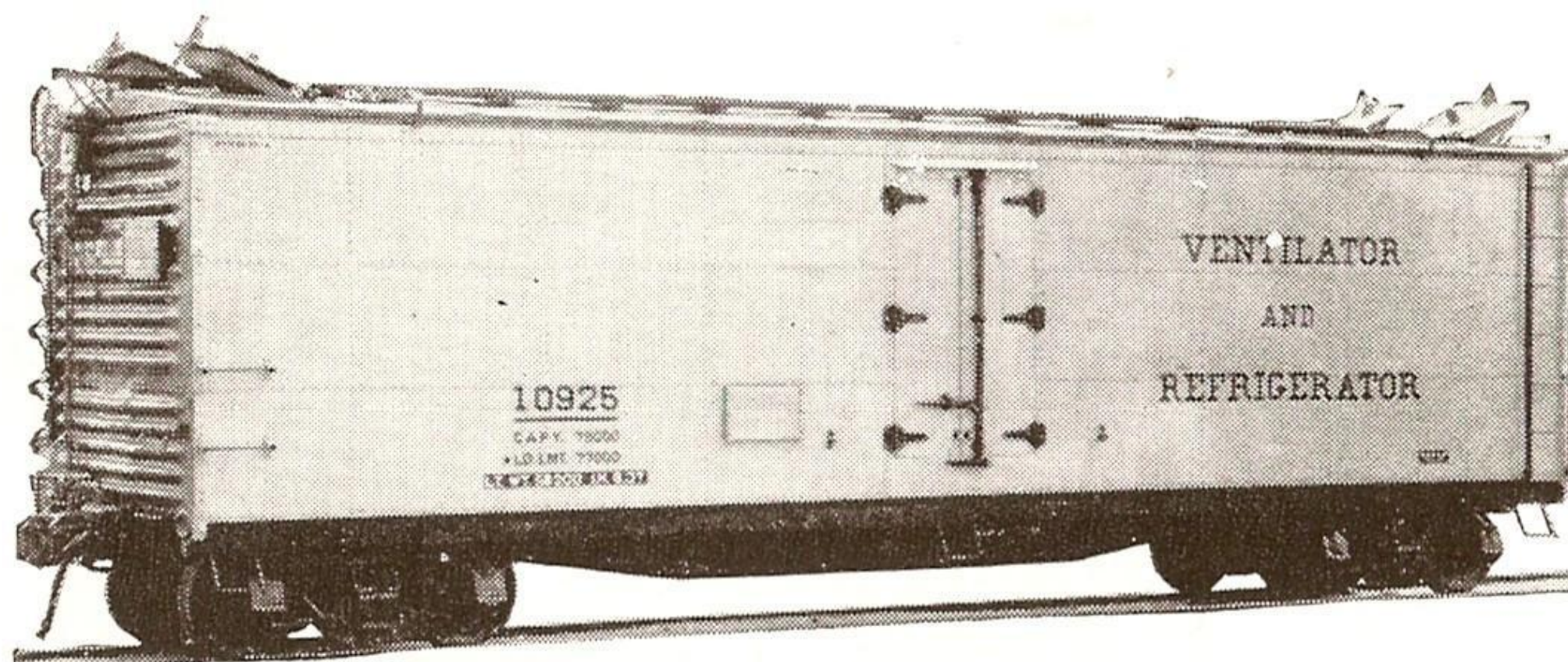
4 - 6 - 4 (Hudson)

FREIGHT TRAIN CARS



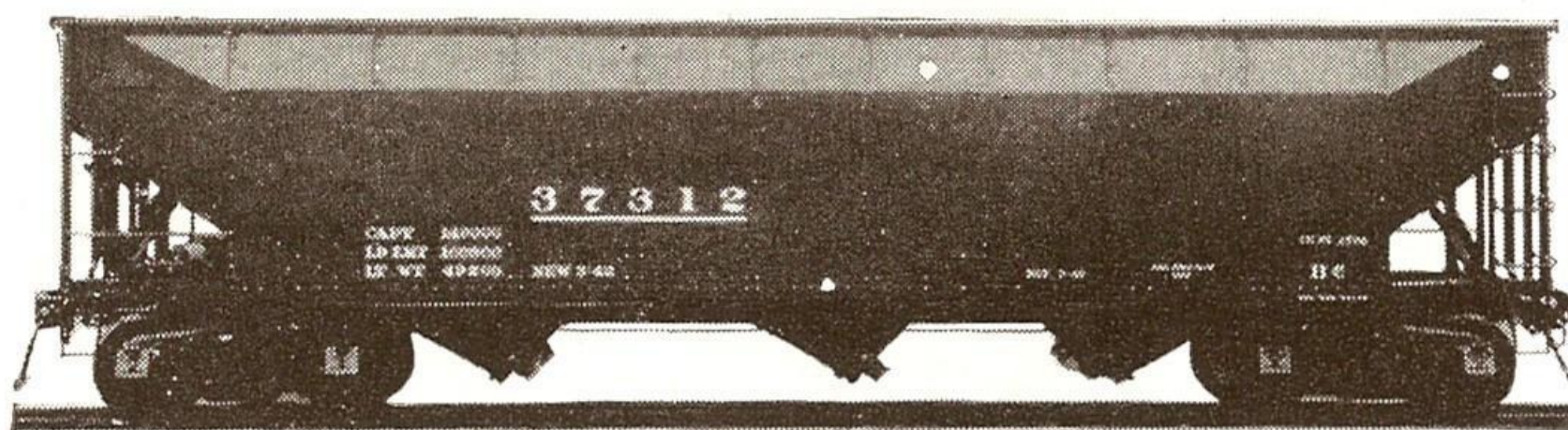
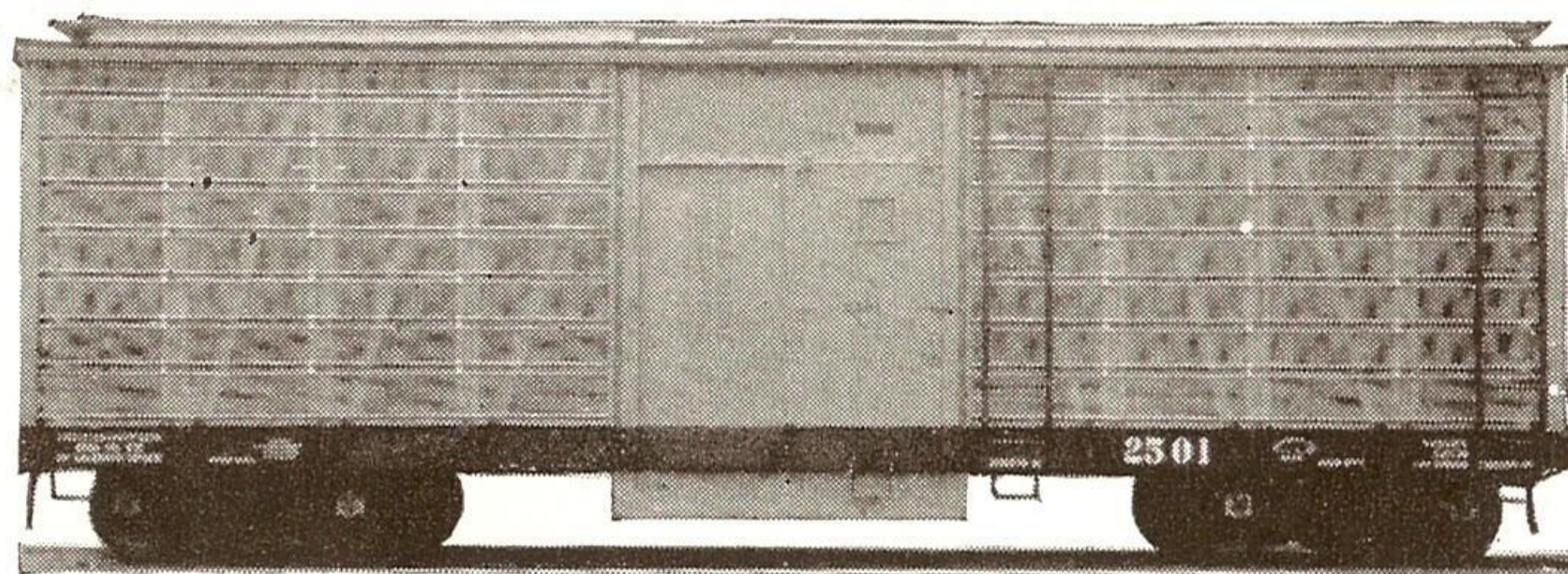
Box
Car

Refrigerator
Car



Stock
Car

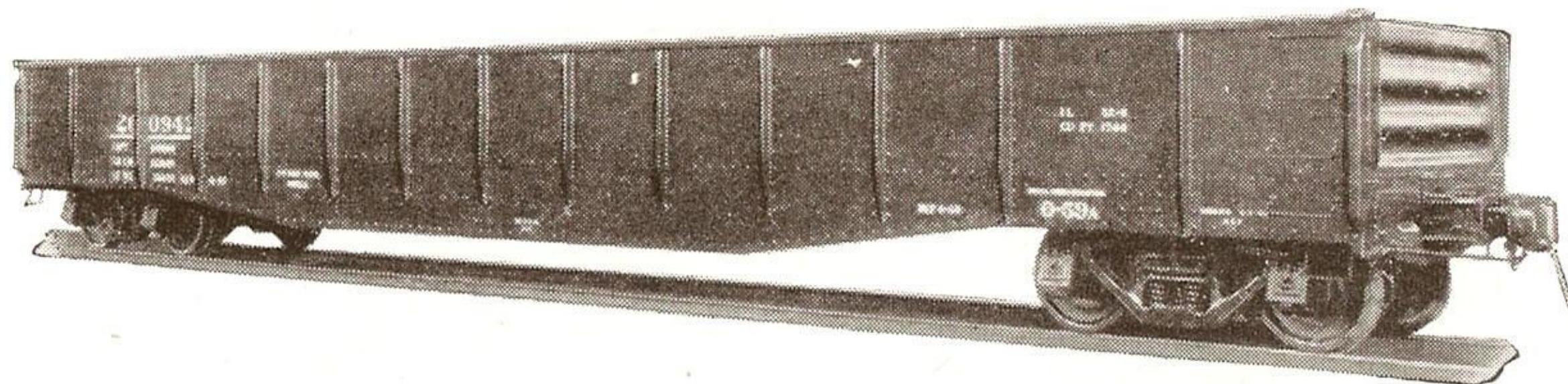
Poultry
Car



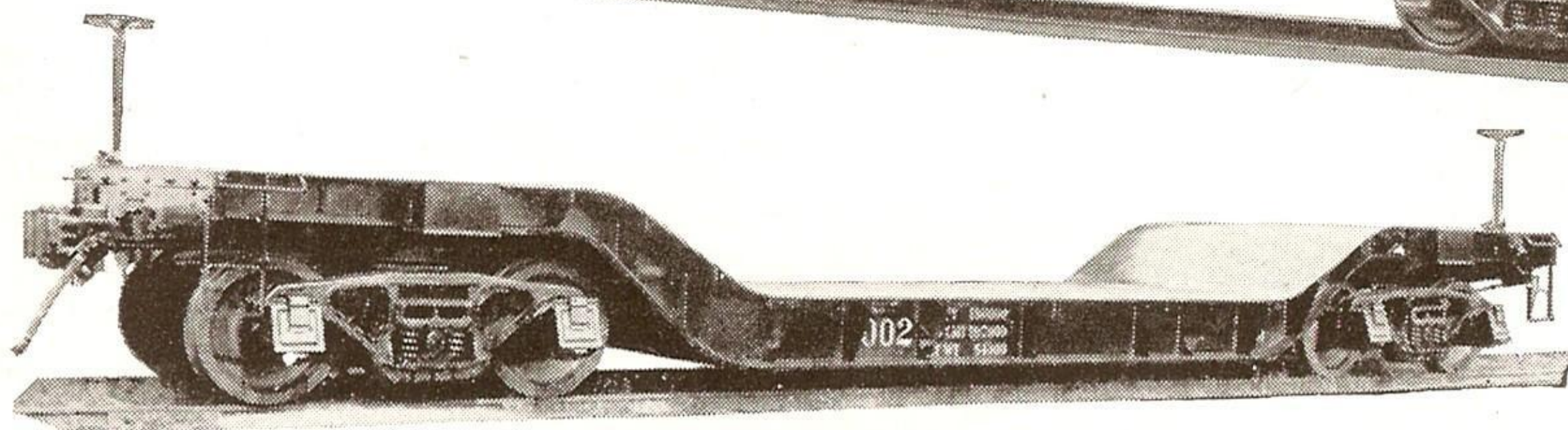
Hopper
Car

FREIGHT TRAIN CARS

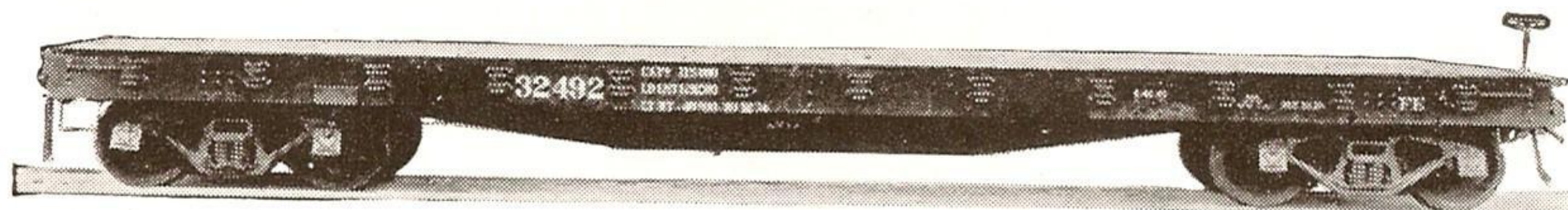
Gondola
Car



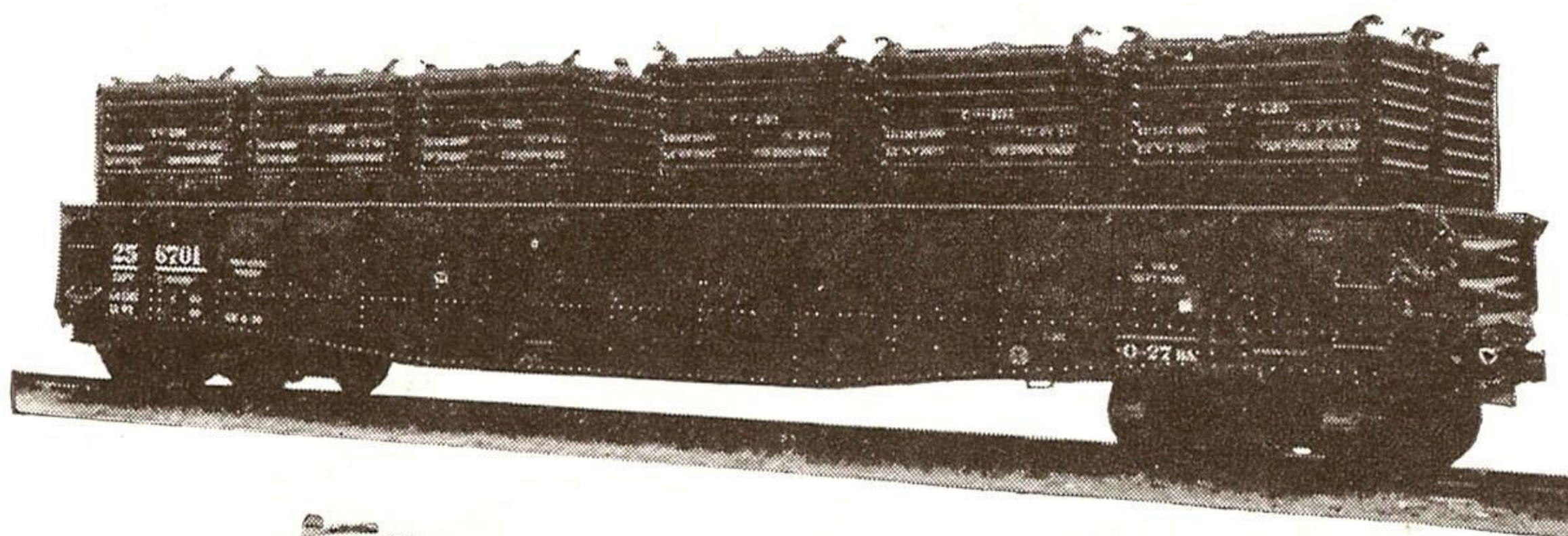
Depressed-
Center
Flat Car



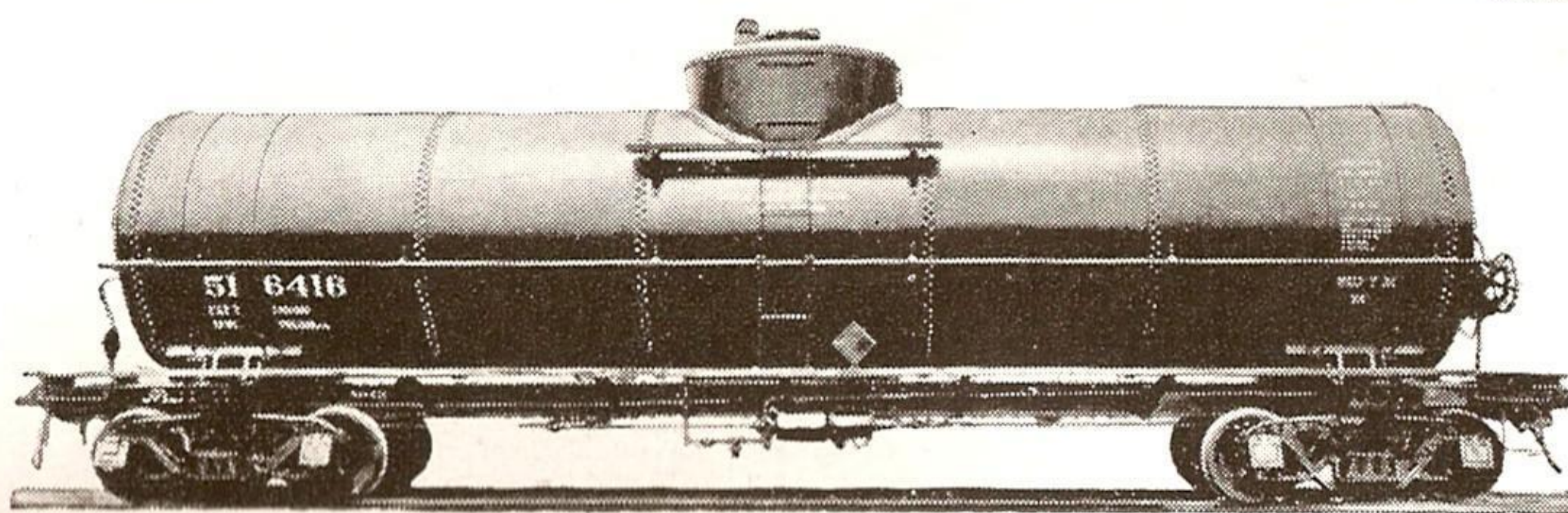
Flat
Car



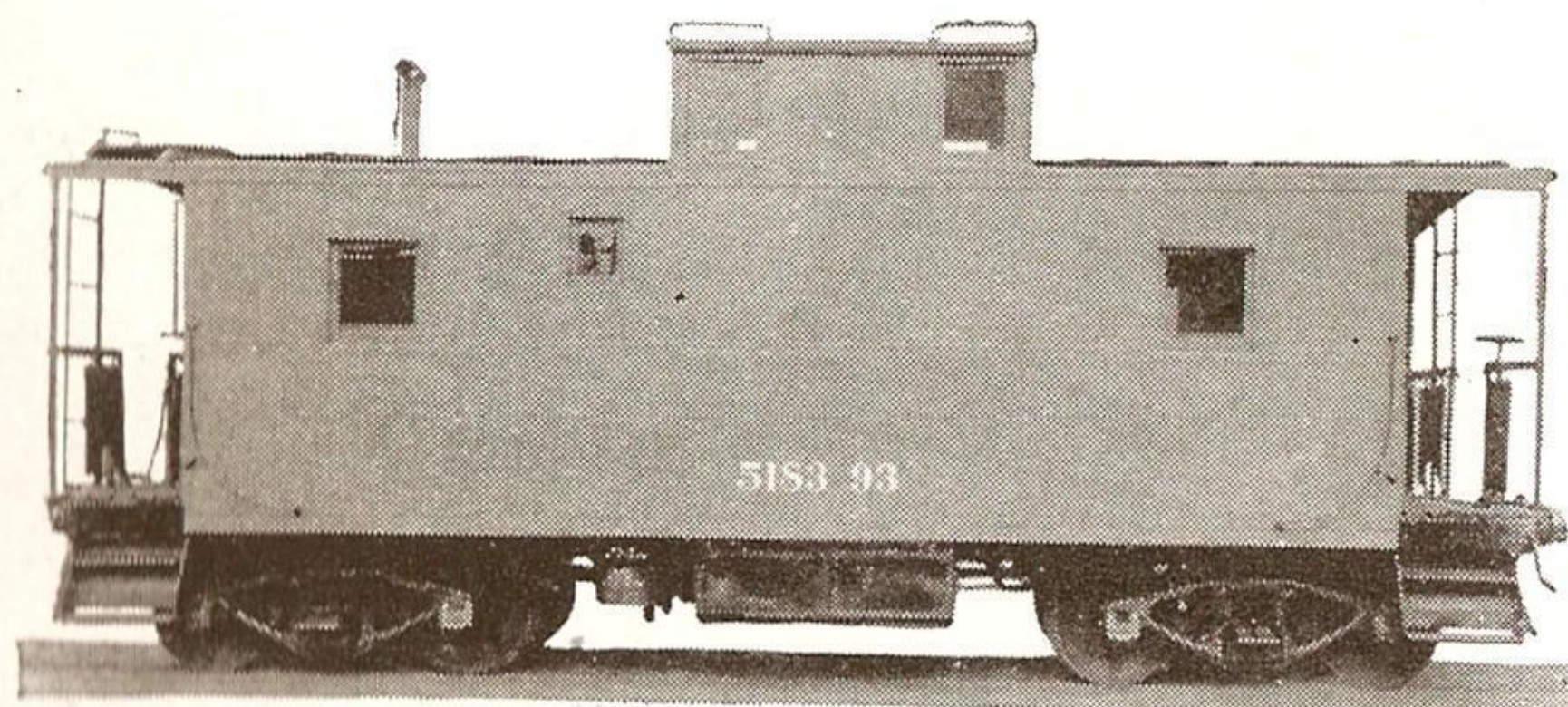
Container
Car



Tank
Car



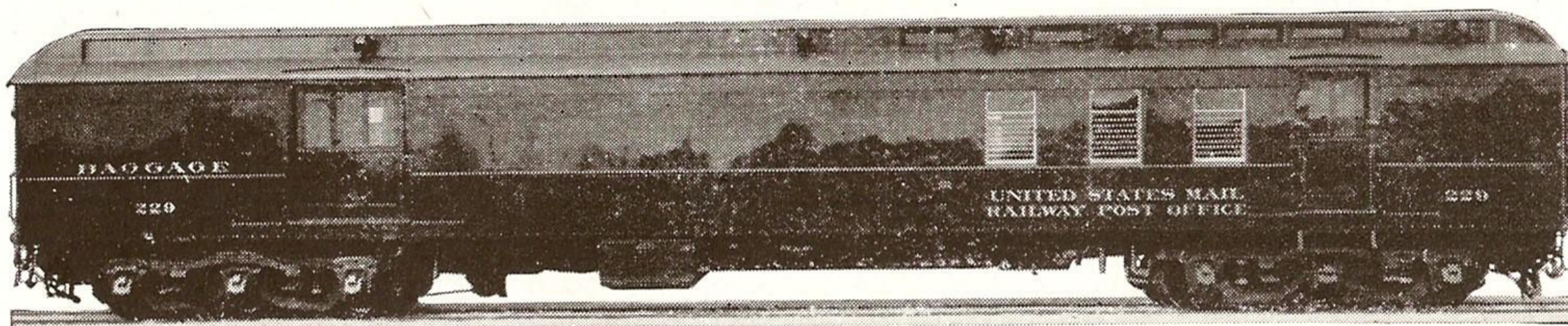
Caboose



PASSENGER TRAIN CARS

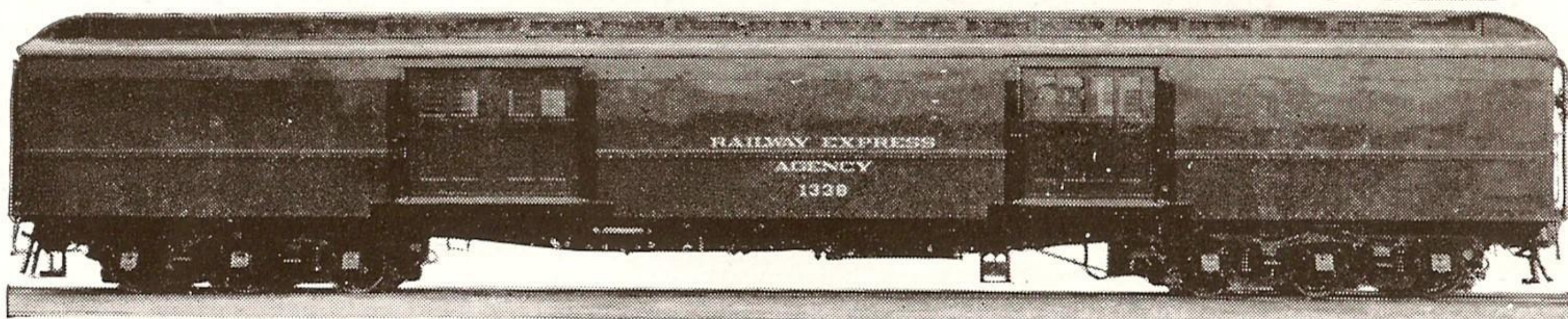


Mail Car

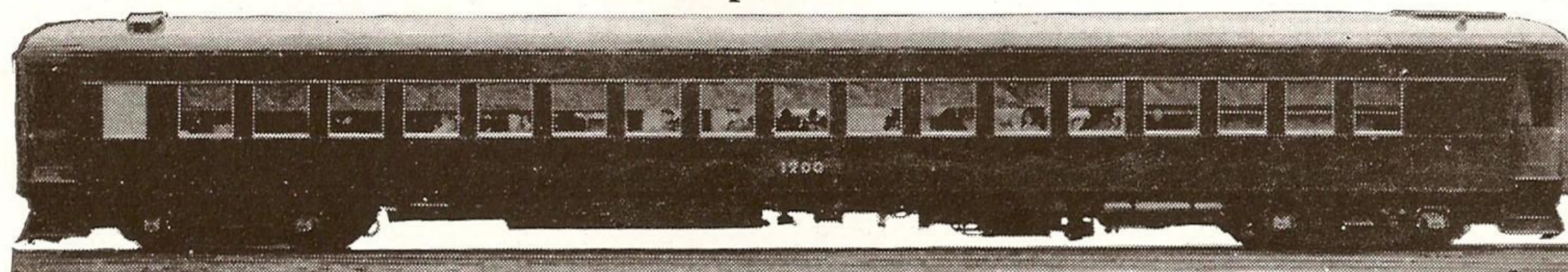


Baggage and Mail Car

Troop
Sleeping
Car

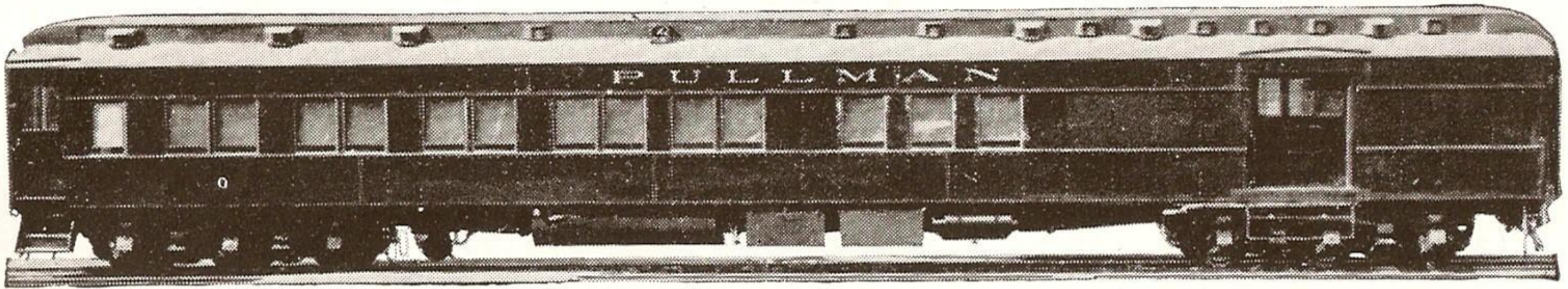


Express Car

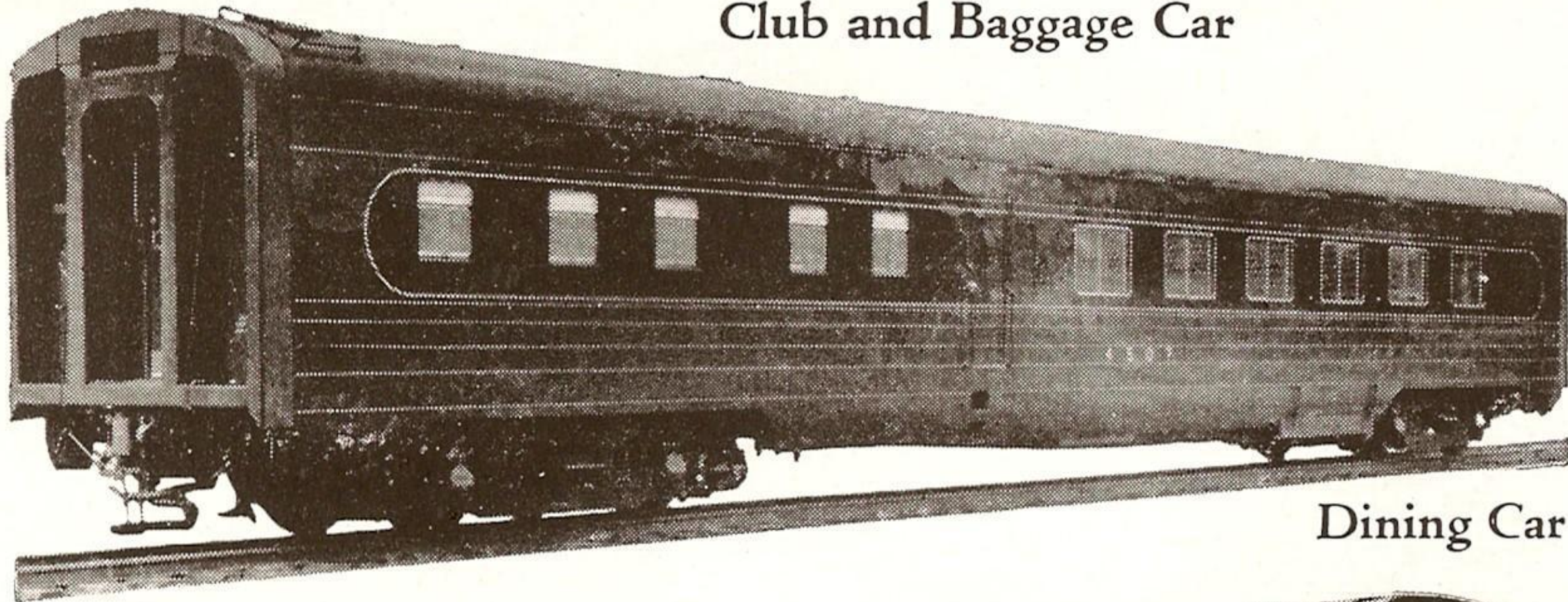


Passenger Coach

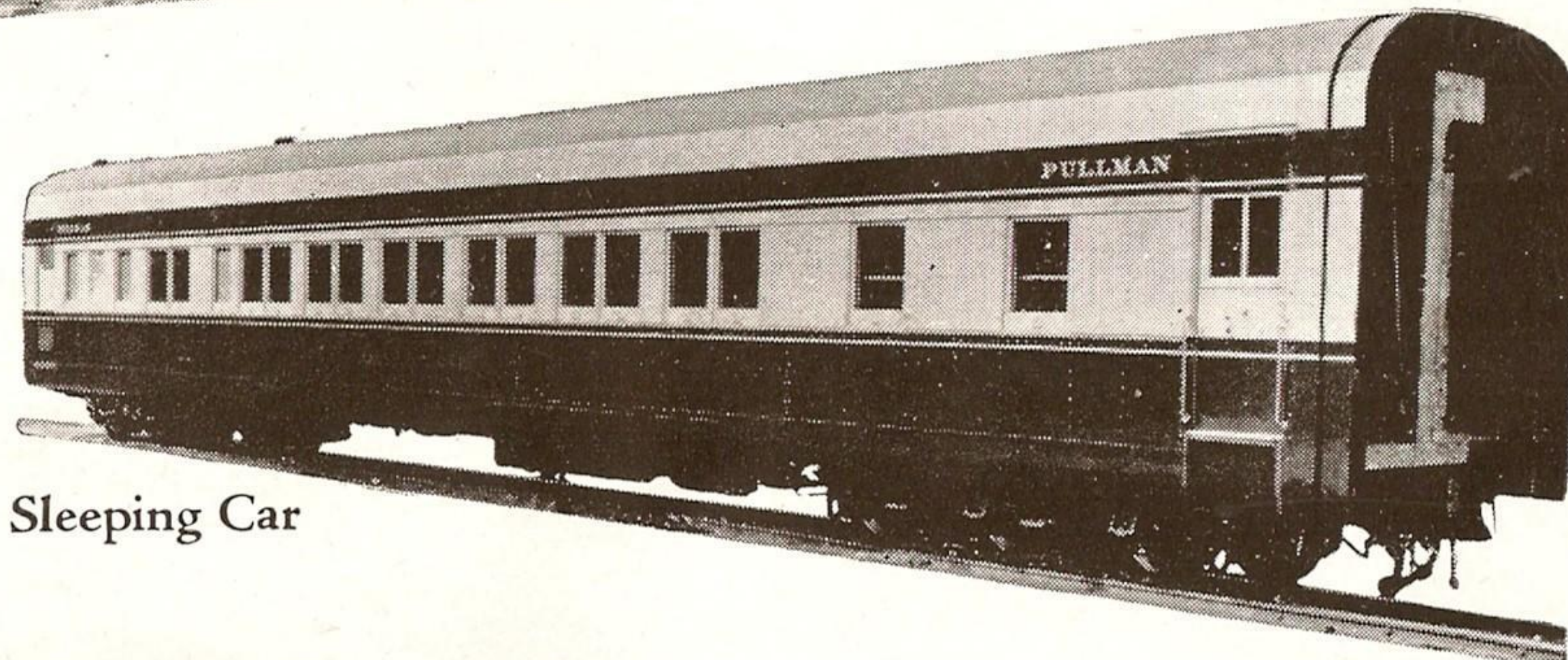
PASSENGER TRAIN CARS



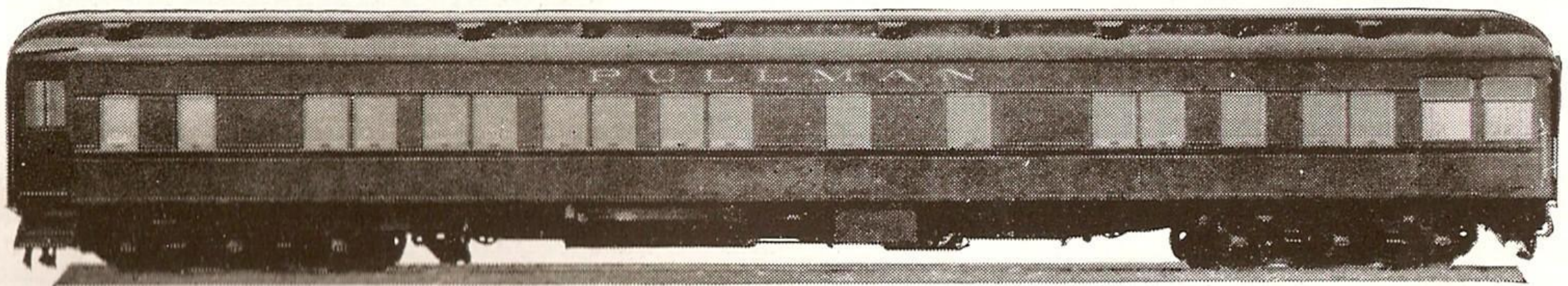
Club and Baggage Car



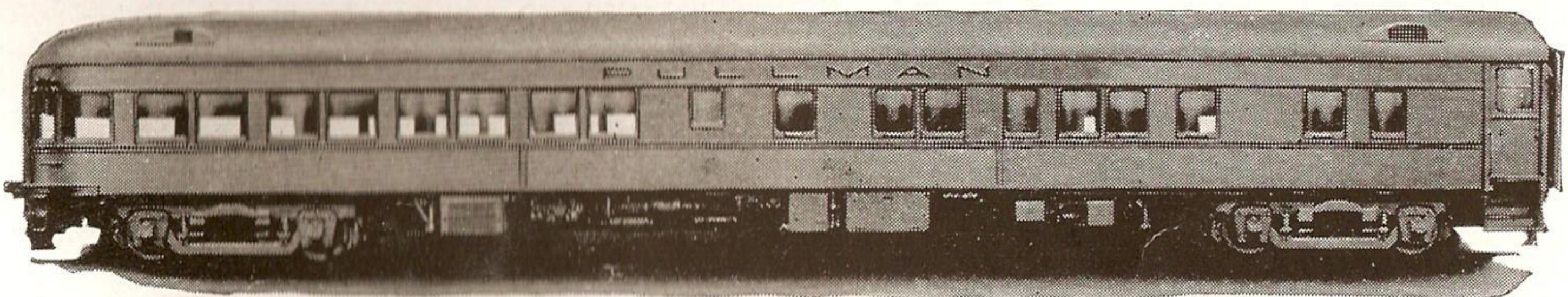
Dining Car



Sleeping Car



Sleeping and Buffet-Lounge Car



Observation-Lounge and Sleeping Car



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